

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

Review of the Commission's Rules)	
Regarding the Pricing of Unbundled)	
Network Elements and the Resale of Service)	
by Incumbent Local Exchange Carriers)	

WC Docket No. 03-173

DECLARATION

OF

TERRY L. MURRAY

ON BEHALF OF AT&T CORP.

December 16, 2003

DECLARATION OF TERRY L. MURRAY

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Attachment 1 - Direct Testimony of Richard J. Walsh on Behalf of AT&T and WorldCom, Inc., filed July 31, 2001, in CC Docket Nos. 00-218, 00-249 and 00-251

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DECLARATION OF TERRY L. MURRAY

I. INTRODUCTION AND SUMMARY OF DECLARATION

(1) My name is Terry L. Murray. I am President of the consulting firm Murray & Cratty, LLC. My business address is 8627 Thors Bay Road, El Cerrito, CA 94530.

(2) I am an economist specializing in analysis of regulated industries. I received an M.A. and M.Phil. in Economics from Yale University and an A.B. in Economics from Oberlin College. At Yale, I was admitted to doctoral candidacy and completed all requirements for the Ph.D. except the dissertation. My fields of concentration at Yale were industrial organization (including an emphasis on regulatory and antitrust economics) and energy and environmental economics.

(3) My professional background includes employment and consulting experiences in the fields of telecommunications, energy and insurance regulation. As a consultant, I have testified on telecommunications issues in proceedings before state regulatory commissions in Alaska, California, Connecticut, Delaware, the District of Columbia, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nevada,

New Jersey, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, Washington and Wisconsin, and before the Federal Communications Commission (“FCC” or “Commission”). My testimony in these proceedings has concerned such issues as costing and pricing for retail services, unbundled network elements (“UNEs”) and interconnection, universal service policy, competition policy (including policy toward proposed mergers), and incentive regulation.

(4) Before I became a consultant in 1990, I was employed in a variety of positions (including Director of the Division of Ratepayer Advocates) at the California Public Utilities Commission (“CPUC”) for approximately six years and had significant responsibility for telecommunications matters. I have also taught economics and regulatory policy at both the undergraduate and graduate levels.

(5) The purpose of this declaration is to respond to the issues raised in the Commission’s *Notice of Proposed Rulemaking* (“Notice” or “NPRM”) in this proceeding regarding cost of capital, non-recurring costs and costs for access to Operations Support Systems (“OSS”).

A. Cost of Capital.

(6) For cost of capital, I explain that the goal of maintaining consistency among all assumptions and inputs to a forward-looking cost methodology does not mandate that the UNE cost of capital input should reflect a high degree of risk. The Commission’s Total Element Long Run Incremental Cost (“TELRIC”) methodology relies on the assumption of contestable markets, rather than perfectly competitive markets. As Prof. Robert E. Willig explains further in his accompanying declaration, the contestable markets paradigm allows the recognition of the lower cost of capital that the incumbent enjoys as a result of its first-mover advantages. This is,

in fact, the manner in which other federal regulators have applied that framework in developing stand-alone costs for the railroad industry.

(7) The “real-world” cost of capital for incumbent local exchange carriers (“ILECs”), as measured by standard financial techniques such as the Discounted Cash Flow (“DCF”) and Capital Asset Pricing Model (“CAPM”) methodologies, already reflects investors’ perceptions of the current and expected risks associated with the provision of UNEs. Indeed, as Dr. Lee L. Selwyn shows in his declaration, the holding-company level cost of capital for the Regional Bell Operating Companies (“RBOCs”) exceeds the cost of capital for those companies’ local exchange operations (including their UNE lines of business) because diversification into riskier ventures such as wireless and broadband services have been the main drivers of the increase in the RBOCs’ “betas” (which measure the systematic risk that the RBOCs face, relative to the market as a whole).

(8) Systematic risk, rather than diversifiable risk, determines the return on investment that investors require to compensate them for holding a security. Investors can hold a diversified portfolio of investments that reduces their exposure to any particular firm’s competitive success or failure; hence, the cost of capital is not closely correlated with the extent of facilities-based competition that a firm faces. The ILECs’ systematic risk is relatively low because the underlying demand for local exchange telecommunications service is fairly stable across a variety of macroeconomic conditions. Hence, investors do not demand above-average (or even market-average) returns from the ILECs’ local exchange and UNE operations.

(9) The cost of capital input for the UNE line of business should not, in any event, exceed the cost of capital that the ILEC actually incurs for its local exchange operations. Any other outcome would violate the principle of nondiscrimination and provide the ILEC with an

unfair competitive advantage. A UNE methodology that incorporates a cost of capital based on a degree of competition that does not exist and is not expected to materialize is inconsistent with this fundamental principle of nondiscrimination.

(10) Nor can one justify an increase to the UNE cost of capital based on either “stranded investment” or “regulatory risk” theories such as those advanced by the incumbents. The cost of capital measured by market-based techniques such as the DCF and CAPM already reflects investors’ perceptions of all relevant risks. There is no legitimate basis for any additional risk premium.

(11) Instead, the Commission should endorse the use of time-tested methodologies for developing the cost of capital. For the cost of equity, these methodologies include the aforementioned DCF and CAPM techniques.

(12) With respect to the DCF, the Commission should join the Wireline Competition Bureau (in the *Virginia Arbitration Order*) and the overwhelming majority of state commissions in rejecting the use of a single-stage or constant-growth DCF incorporating the unrealistic assumption that a company’s growth in dividends, earnings and book value will be constant in perpetuity. ILECs relying on the constant-growth DCF have extrapolated from analysts’ five-year growth forecasts in a way that implies that a handful of companies (the ILECs) will come to dominate the U.S. economy in the relatively near future. This absurd result is avoided by multi-stage DCF models reflecting the more plausible assumption that unusually high (or low) short-run growth rates will, over time, regress toward the mean annual average growth rate for the economy as a whole.

(13) The lack of certainty about the precise trajectory of earnings growth rates in the second and successive states of the multi-stage DCF model is no ground for rejecting the model. Both the magnitude and the pattern of the growth rate assumptions are reasonable models of the inevitable regression of above-average short run rates of earnings growth to the long-run growth rate of the economy. And, most widely used multi-stage models produce similar results. Disregarding DCF data entirely merely because there are many possible ways to model the long-term regression to the mean would make the perfect the enemy of the good.

(14) The reliability of the cost of equity estimate can also be enhanced by applying the CAPM methodology. In addition to the beta measure of risk that I mentioned above, the most controversial input into the CAPM is the assumed market risk premium (*i.e.*, the additional return that investors demand to hold the market portfolio of investments rather than a “risk-free” bond such as a U.S. Treasury bond). A substantial body of academic literature, which I discuss below, indicates that the forward-looking market risk premium is significantly lower than the historical average premium that has been used in many regulatory proceedings to estimate the cost of capital. The Commission should require the use of a forward-looking risk premium that is consistent with the growing consensus that the market risk premium is at or below four percent.

(15) The cost of debt can be determined in a fairly straightforward manner based on the yield-to-maturity for publicly traded ILEC debt. The Commission should require, however, that the average maturity of the debt assumed in a UNE cost study must not exceed the average economic life of the assets being financed (*i.e.*, the capital investments in a UNE cost study). The Commission should also indicate that states may reflect, in part, the cost of short-term debt

(debt with a maturity of less than one year) if the use of such debt is an efficient capitalization choice.

(16) More generally, the Commission should require that the cost of capital reflect an efficient capital structure, not merely the ILECs' current market capitalization. To this end, the Commission should endorse the use of a long-run target capital structure, rather than a "snapshot" of the ILECs' market capitalization. I describe below public evidence that the long-run target capital structure is likely to be in the range of 60 percent equity and 40 percent debt.

(17) By commending these specific methodological approaches to the states, the Commission can simplify UNE cost proceedings and ensure a high degree of uniformity in the UNE cost of capital inputs to the various state-specific studies.

(18) Finally, I recommend that the Commission leave the door open for states to adopt UNE-specific costs of capital, but that it continue to permit states to adopt a uniform cost of capital input for all UNE cost studies. The available data make it difficult, if not impossible, for states to differentiate reliably among UNEs in estimating the cost of capital.

B. Non-Recurring Costs and Costs for Access to OSS.

(19) The Commission should reject the ILECs' proposal that the Commission adopt a "more real-world" methodology for determining non-recurring costs. Such a methodology is as inappropriate for a determination of non-recurring costs ("NRCs") as it is in the context of recurring costs. Whether characterized as an embedded cost approach or as a short-term incremental cost approach, the ILECs' "more real-world" approach would violate basic principles of the forward-looking cost methodology to which the Commission has already

committed itself, and would virtually ensure that non-recurring charges would become absolute barriers to effective competition.

(20) Thus, the Commission should continue to require the use of the current TELRIC methodology not only for recurring costs, but for non-recurring costs as well. Forward-looking costs can be properly calculated only under a long-run incremental cost approach which assumes the use of the most efficient technology available by an efficient provider. A “mix-and-match” approach that used different network assumptions to determine recurring and non-recurring costs would produce total costs that bear no reasonable relation to forward-looking costs.

(21) Furthermore, even if applied consistently to both recurring and non-recurring costs, the short-term incremental costing methodology urged by the ILECs would overstate true forward-looking costs, because the costs produced by the methodology would reflect the inefficiencies of the ILECs’ embedded network. Indeed, such an approach would only further encourage the ILECs to perpetuate the existing inefficiencies of the non-recurring activities that they perform for CLECs. By contrast, the use of a short-term incremental costing methodology would provide no benefits other to enhance the revenues and competitive positions of the incumbents. Far from simplifying cost proceedings, the “more real-world” approach would – at most – only alter the issues on which expert witnesses disagreed.

(22) Because UNE prices should be based on forward-looking costs that assume the least-cost, most efficient technology currently available, any non-recurring charges should reflect the costs associated with efficient, forward-looking OSS – *i.e.*, OSS with the maximum cost-effective electronic exchange of information between companies, and a correspondingly minimal level of manual intervention. At most, the only non-recurring costs for order processing that ILECs should be allowed to recover are the costs of the labor required to manually correct and

provision orders that fall out due to a CLEC's input error that the ILEC could not reasonably screen out. Because such instances would be rare in a forward-looking environment, the amount and occurrence of any proper non-recurring charges for service orders should be minimal.

(23) To the extent that any costs associated with access to OSS can be recovered under proper forward-looking cost principles, such costs should be recovered by the ILEC through its annual cost factors. Recovery through annual cost factors automatically spreads the ongoing costs of OSS over all the users of that OSS – both retail and wholesale. ILECs should not be permitted to recover access to OSS costs through separate charges, which assign all ongoing OSS costs solely to CLECs as wholesale customers and thus unfairly inflate the prices paid by CLECs. Recovery of ongoing OSS costs through such factors is also the most practical approach, given that the ILECs do not include precise detail in their books of account that would allow further identification of cost causation and therefore a more granular assignment of OSS costs.

(24) However, ILECs should not be permitted to recover at all from CLECs the one-time development costs that they incurred to allow CLECs access to their OSS – whether by expense factors or otherwise. Such costs were caused solely due to the transition to competition required by the Telecommunications Act of 1996 (“Act”) and by this Commission – and therefore, were not caused by the CLECs. These development costs should be recovered in a competitively neutral fashion or, alternatively, through a surcharge imposed on all end-users of the incumbent and the CLECs. But, regardless of how the Commission decides to treat OSS development costs, any properly recoverable forward-looking OSS operating and maintenance costs should be recovered through annual cost factors.

(25) As the test for distinguishing between those costs that should be recovered in recurring charges and those costs that can be (but do not have to be) recovered through non-recurring charges, the Commission should adopt a “reusability” test – which allows ILECs to recover the costs of a particular activity through non-recurring charges only if the activity exclusively benefits the CLEC requesting that activity and cannot be used later by others. Thus, if a particular activity creates an asset that can be re-used by the ILEC or a subsequent CLEC (such as a connected-through loop), the cost of that activity should be recovered only through recurring costs. This approach will prevent double recovery of costs by the ILEC, while at the same time allowing the ILEC full recovery of its total forward-looking costs. By contrast, the approach advocated by the ILECs, under which the costs of any one-time activity would be treated as a non-recurring cost, would result in double recovery of the relevant costs and erect yet another barrier to entry.

(26) Although any methodology for determining non-recurring costs would require some care in establishing recurring expenses based on the ILECs’ expense data (to avoid double recovery of the non-recurring costs included in the ILECs’ booked expenses), the reusability test minimizes the level of non-recurring costs and thereby reduces the risk of double-counting. Furthermore, if the ILECs’ “one-time activity” test were adopted as the basis for establishing non-recurring charges, it is unlikely that a workable refund mechanism could be developed to ensure that subsequent users of the activity pay their fair share of the costs of reusable activities.

(27) Contrary to the suggestion of the *NPRM*, neither consideration of the non-recurring charges that ILECs charge to their retail customers nor a reduction (or elimination) of the allocation of common costs and overhead to non-recurring activities would enhance the accuracy of the determination of the non-recurring costs. The non-recurring charges that ILECs

assess in the monopoly retail environment are not relevant in the context of the wholesale environment, particularly in view of the inconsistent methodologies that state commissions have used to calculate them. Similarly, as long as the Commission retains its requirement that costs be directly assigned to UNEs to the greatest extent possible and that common costs and overheads must be forward-looking and efficient, the reduction or elimination of common costs and overhead is unlikely to have a significant effect on the level of NRCs.

(28) CLECs should not be charged for disconnection costs unless and until the customer's service has actually been disconnected. To allow the ILEC to recover such costs at the time the CLEC orders a connection would violate principles of cost causation, because the ILEC does not incur such costs until the disconnection occurs. Indeed, the ILEC often does not incur such costs at all. The impropriety of allowing ILECs to collect such costs "up-front" could not be corrected by discounting the disconnection charges to account for the time value of money based on the average amount of time that a CLEC keeps (or is expected to keep) a customer. Even if the ILECs could supply the data needed to permit an industry-wide calculation, the discounting approach would unreasonably discriminate among CLECs.

(29) Finally, ILECs should not be permitted to assess a separate charge for "loop conditioning." Any such charge is inconsistent both with forward-looking costing principles and the ILECs' own guidelines. A forward-looking network would not require any conditioning of loops. Industry guidelines in effect for more than 20 years have called for elimination of the inhibitors, such as load coils, that necessitate conditioning. In any event, allowing a separate "conditioning" charge would result in double-recovery to the ILEC, because the monthly forward-looking recurring charge for loops would recover all costs for building a network without the inhibitors that require conditioning. Even if the Commission adopted a "more real-

world” approach to costing, allowing a separate charge for conditioning would improperly reward the ILECs for their refusal to follow decades-old guidelines that call for networks that require no conditioning. Furthermore, the error (and anticompetitive effects) of allowing a separate conditioning charge could not be alleviated by re-allocating those costs among present and future users of the conditioned loop, given the difficulty of developing a workable refund mechanism.

(30) I explain the basis for each of these conclusions and recommendations in the sections that follow.

II. COST OF CAPITAL (*NPRM* ¶¶ 82-91)

(31) “The TELRIC of a network element is the sum of three components—operating expenses, depreciation expense, and cost of capital.”¹ Because the provision of local telephone service is capital-intensive, the cost of capital component is an important part of total costs under TELRIC. If the cost of capital is overestimated, TELRIC prices will be too high. An excessive cost of capital will therefore deter competition, encourage inefficient construction of bypass facilities by entrants and generate improper subsidies for the ILEC.

(32) The TELRIC methodology requires that “the forward-looking costs of capital (debt and equity) needed to support investments required to produce a given element shall be included in the forward-looking direct cost of that element.”² The overall forward-looking cost

¹ Federal Communications Commission, *Report and Order and Order on Remand in CC Docket No. 01-338*, 2003 WL 22175730 (F.C.C.), ¶ 682, released August 21, 2003, (“*Triennial Review Order*”).

² Federal Communications Commission, *First Report and Order*, In the matter of: Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98, released August 8, 1996 (“*Local Competition Order*”) ¶ 690.

of capital is a weighted average of the costs of debt and equity, where the weighting is derived from the capital structure. Thus, the weighted-average cost of capital (“WACC”) can be expressed as follows:

$$\text{WACC} = W_D \cdot k_D + W_E \cdot k_E$$

where

W_D = weight of debt in the capital structure;

k_D = cost of debt capital;

W_E = weight of equity in the capital structure; and

k_E = cost of equity capital.

(33) This weighted-average cost of capital represents the compensation investors require, on a forward-looking basis, to hold claims on assets deployed to provide unbundled network elements. “*Cost of capital* reflects the rate of return required to attract capital, *i.e.*, the rate of return that investors expect to receive from alternative investments that have the same risk.”³

(34) In its *Notice*, the Commission identified two broad categories of issues relating to cost of capital: (1) conceptual issues that relate primarily to making the cost of capital inputs for a UNE cost study consistent with the other assumptions of the forward-looking cost methodology used to calculate UNE costs; and (2) methodological issues that relate to the estimation of the specific components of the cost of capital, *i.e.*, the cost of equity, the cost of debt and the capital structure. My declaration addresses both of these broad categories of issues; the accompanying declarations of Prof. Robert D. Willig, Dr. Lee L. Selwyn and Mr. John C.

³ *Triennial Review Order* ¶ 682.

Klick provide additional material concerning the conceptual issues identified in the Commission's *Notice*.

A. Consistency With The Adopted Forward-Looking Cost Methodology Does Not Mandate That The UNE Cost Of Capital Input Reflect A High Degree Of Risk.

(35) The Commission explicitly defined the relevant cost of capital as one that reflects the risk incurred in the business of leasing unbundled network elements at wholesale.⁴ That is, the cost of capital input for UNE pricing must reflect only the risks of providing the network elements, and not the higher risks of providing retail services, for retail-related costs “are not attributable to the production of network elements that are offered to interconnecting carriers and must not be included in the forward-looking direct cost of an element.”⁵ This requirement is consistent with my understanding of economic and financial theory.

(36) The Commission's *Local Competition Order* further provided that the required return on investment would be defined by the “business risks that” the incumbents “face.”⁶ Prior to the *Triennial Review Order*, both state regulators⁷ and the courts⁸ generally interpreted this language as a reference to the risks that incumbents currently or foreseeably face in their UNE line of business, not the risks of a hypothetical competitive market. Under this standard, state

⁴ *Local Competition Order* ¶ 702.

⁵ *Id.* at ¶¶ 691, 700; *accord*, *Bell Atlantic-Delaware, Inc. v. McMahon*, 80 F.Supp.2d 218 (D. Del. 2000) at 240.

⁶ *Local Competition Order* ¶ 702.

⁷ *See, e.g., Order* in Indiana URC Cause No. 40611, p. 8 (Ind. URC, June 30, 1998)

⁸ *Bell Atlantic-Delaware*, 80 F.Supp.2d at 240 n. 19 (D. Del. 2000) (discussing *Local Competition Order* ¶ 702).

commission orders, for the most part, found that the relevant cost of capital for UNEs was in the range of nine to 11 percent.⁹

(37) In the *Triennial Review Order*, however, the Commission “clarified” its risk standard. Specifically, the Commission identified

two types of risks that should be reflected in the cost of capital. First, we clarify that a TELRIC-based cost of capital should reflect the risks of a competitive market. The objective of TELRIC is to establish a price that replicates the price that would exist in a market in which there is facilities-based competition. In this type of competitive market, all facilities-based carriers would face the risk of losing customers to other facilities-based carriers, and that risk should be reflected in TELRIC prices.¹⁰

....

Second, we clarify that a TELRIC-based cost of capital should reflect any unique risks (above and beyond the competitive risks discussed above) associated with new services that might be provided over certain types of facilities. In the *Local Competition Order*, the Commission stated that different UNEs may have different costs of capital. We now clarify that the use of UNE-specific costs of capital is an acceptable method of reflecting in UNE prices any risk associated with new facilities that deploy new technology and offer new services.¹¹

⁹ See *Order, Findings and Recommendations of Hearing Examiners*, Delaware PSC Docket No. 96-324, ¶ 68 (De. PSC Apr. 7, 1997) (10.28 percent), *affirmed*, Order No. 4542, at ¶ 29 (De. PSC July 8, 1997), *affirmed*, *Bell Atlantic-Delaware*, 80 F.Supp.2d 218, 239-41 (D.Del. 2000); Case No. 8731, at 29 (Md. PSC Sept. 22, 1997) (10.1 percent); Compliance order, Docket No. TO00060356, at 2 (New Jersey BPU, Nov. 30, 2001) (8.82 percent); *Nextlink Pennsylvania, Inc.*, 196 P.U.R.4th 172, 210 (1999) (“*Global Order*”) ((adopting 9.83 percent value)), PA PUC Tentative Order of Nov. 4, 2002 (reaffirming WACC of 9.83 percent, prior to the *Virginia Arbitration Order*); Order, Case No. PUC970005, at 11 (Va. SCC May 22, 1998) at 6 (10.12 percent), D.99-11-050, California PUC Docket Nos. R.93-04-003/I.93-04-002 (Cal. PUC Nov. 18, 1999) (adopting 10.00 percent value); Arbitration Award, Texas PUC Consolidated Docket Nos. 16189, 16196, 16225, 16285, and 16290, ¶ 68 (Tx. PUC Nov. 7, 1996) (10.36 percent); Illinois CC, *Second Interim Order*, Illinois CC Docket Nos. 96-0486/0569 (Consol.), p. 22, (Illinois CC Feb. 17, 1998) (9.52 percent), Indiana URC, *Order* in Indiana URC Cause No. 40611, p. 8 (Ind. URC, June 30, 1998) (9.74 percent); Order No. PSC-02-1574-FOF-TP (Florida PSC, November 15, 2002) (adopting 9.63 percent for Verizon Florida).

¹⁰ *Triennial Review Order*, ¶ 680.

¹¹ *Id.* ¶ 683 (footnotes omitted).

(38) The Commission indicated in its *Triennial Review Order* that incorporating the risks of a competitive market¹² into the cost of capital for UNEs is a way of creating a consistent set of assumptions for a UNE cost study. Even facially, the changed cost of capital assumptions adopted in the *Triennial Review Order* are not a license to gouge. As an initial matter, the stock prices, betas and other market information used in the standard cost of capital estimation methodologies described below already reflect investors' views of all of the risks associated with expected future competition. Thus, to the extent the market shares the incumbents' view that widespread facilities-based competition from, *e.g.*, cable, Voice-over-Internet-protocol ("VOIP") and wireless telephony providers is imminent, the risks associated with that competition are fully reflected in cost of capital estimates using methodologies such as the Discounted Cash Flow ("DCF") and Capital Asset Pricing Model ("CAPM") techniques.

(39) In any event, the Commission's stated intent to create a consistent set of assumptions for a UNE cost study must be read in the context of the other assumptions with which the cost of capital is to be consistent. That is, *each and every one of the assumptions used in a TELRIC study must reflect the costs that a hypothetical efficient carrier would incur* if it were to deploy the least-cost technology currently available in the most efficient network configuration.¹³

Specifically, TELRIC equates the current market value of the existing network of an incumbent telecommunications provider with the cost the incumbent LEC would incur today if it built a local network that could provide all the services its

¹² *Id.* ¶ 680.

¹³ *Triennial Review Order* ¶ 682 (explaining that "[t]o calculate rates based on an assumption of a forward-looking network that uses the most efficient technology (*i.e.*, the network that would be deployed in a competitive market), without also compensating for the risks associated with investment in such a network, would artificially reduce the value of the incumbent LEC network and send improper pricing signals to competitors.")

current network provides, to meet reasonably foreseeable demand, using the least-cost, most-efficient technology currently available.¹⁴

....

TELRIC assumes that the value of an incumbent LEC's network is constrained by the most efficient technology available, *even if the incumbent LEC itself does not deploy, or plan to deploy, that technology*.¹⁵

(40) Read in this context, the Commission's requirement to reflect the risks of a competitive market in a TELRIC-based cost of capital does not become the license to increase costs that the incumbents have claimed. The fundamental purpose of requiring incumbents to unbundle network elements and offer them at the cost-based prices that would prevail in a competitive market is to prevent those incumbents from exercising the market power that they, in fact, have over UNEs.¹⁶ Hence, a forward-looking cost study should at most reflect the risks that the hypothetical efficient carrier would incur if it were subject to effective competition—and no more. Any higher cost of capital would defeat the objective of TELRIC pricing.

(41) In light of the *NPRM's* emphasis on “real-world” costing, however, the Commission should keep in mind that basing the cost of capital input for a forward-looking cost study on the assumption that the ILECs face significant facilities-based competition in the provision of UNEs is the most extreme form of hypothetical costing. The *Triennial Review Order* itself eliminated any conceivable “real-world” basis for the two types of risk that the same *Order* requires to be reflected in the UNE cost of capital input.

¹⁴ *Id.*, ¶ 669.

¹⁵ *Id.*, ¶ 670 (emphasis supplied).

¹⁶ *Local Competition Order*, ¶ 679 (“Adopting a pricing methodology based on forward-looking, economic costs best replicates, to the extent possible, the conditions of a competitive market. In addition, a forward-looking cost methodology reduces the ability of an incumbent LEC to engage in anti-competitive behavior. Congress recognized in the 1996 Act that access to the incumbent LECs’ bottleneck facilities is critical to making meaningful competition possible.”)

(42) First, the impairment standard adopted in the *Triennial Review Order* requires ILECs to unbundle network elements only when the likelihood of significant facilities-based entry is remote.¹⁷ Hence—and by definition—UNEs will be provided *only* when the competitive risk of facilities-based competitive entry is low. This means that the Commission’s observation that network elements are likely to remain “bottleneck, monopoly services” without “significant competition” is just as true today as it was in 1996.¹⁸

(43) Second, the *Triennial Review Order* largely eliminated any rationale for adjusting the cost of capital upward to reflect the second type of risk mentioned in the *Order*—“any risk associated with new facilities that deploy new technology and offer new services.”¹⁹ For example, pursuant to the *Triennial Review Order*, ILECs are no longer required to unbundle facilities that provide access to packet switching.²⁰ Therefore, it would be inappropriate to consider any risk associated with that technology in the UNE cost of capital.

(44) UNEs in general are mature, well-established functions of the ILEC networks that allow competitors like AT&T to offer standard telecommunications services (such as basic voice-grade services). Providing such functionality entails relatively little risk compared to the risk associated with, *e.g.*, novel broadband services provided over cutting-edge technology.

¹⁷ *Triennial Review Order* at ¶¶ 201-02 (summarizing new high-capacity loop unbundling requirements), 419-28 (summarizing new switching requirements), and 359-60, 534 (summarizing new transport requirements). Indeed, the *Triennial Review Order* provides even greater limitations on the availability of UNEs. The *Order* narrowed competitors’ access to hybrid fiber-copper loops to only the Time Division Multiplexed (“TDM”) capabilities of those loops, despite evidence showing that facilities-based alternatives to the non-TDM capabilities of such loops are extremely limited. *Id.* ¶¶ 285-297.

¹⁸ *Local Competition Order*, ¶ 702.

¹⁹ *Triennial Review Order* ¶ 683.

²⁰ *Id.* ¶¶ 285-297.

Hence, as I discuss further below, the cost of capital for UNEs should be lower than the company-wide cost of capital, even under the *Triennial Review Order*'s assumption of facilities-based competition for UNEs.

(45) The apparent disparity between the risk assumptions associated with the “real world” and those sketched in *Triennial Review Order*'s cost of capital discussion raises the question of whether consistency truly requires the UNE cost of capital inputs to reflect the risks that would exist in a market “in which there is facilities-based competition.” Thus, the *Notice* (§§ 83-84) asks parties to indicate their views about the relevant risk assumption in the wake of the *Triennial Review Order*'s findings.

(46) As I explain in the discussion that follows, whether the Commission returns to the cost of capital standard in effect from 1996-2003, or adheres to the modified competitive standard adopted in the *Triennial Review Order*, ultimately should have little effect on the cost of capital input for a UNE cost study. Whether the cost of capital is based on the competition actually foreseen by the ILECs, or the theoretical competitive model underlying the TELRIC paradigm, the relevant risk—and the cost of capital—is low in either case.

1. The Competitive Model Underlying The TELRIC Methodology Does Not Imply A High Degree Of Risk.

a. There Is Legal And Regulatory Precedent For Developing Prices Designed To Replicate The Effects Of A Competitive Market That, Nonetheless, Reflect Only The “Real-World” Cost Of Capital For The Incumbent.

(47) As an initial matter, there is ample precedent for relying on a “real-world” cost of capital, even when developing prices that are intended to replicate the effects of a competitive market.

(48) Such an approach is consistent with my understanding, as a non-lawyer, of the ruling of the United States District Court in Delaware in which the court rejected Verizon's arguments for a cost of capital based on phantom competitive risks:

Bell points to an apparent contradiction in assuming instantly competitive prices for network elements (even though no such competition now exists) but, in the context of determining cost of capital, assuming little competition and, consequently, low costs of capital. . . . The Telecommunications Act attempts to recreate the prices that a hypothetical efficient company would charge for its network elements and services in a competitive market. Indulging in this fiction, however, does not change the fact that ILECs like Bell do not face the same competitive risks as firms operating in a competitive market. Indeed, ILECs have had no competition for decades, and they will face little competition in the market for network elements in the near future. *See Local Competition Order* ¶ 702, at 353. Therefore, in introducing competition in the local telephone market, it makes perfect sense to recreate competitive prices while acknowledging that the current lack of competition warrants reduced costs of capital.²¹

(49) The Delaware court's opinion is consistent with a longstanding regulatory tradition. Long before the passage of the Act, regulators sought to replicate the prices and performance that would obtain if there were effective competition;²² nonetheless, it is equally true that regulators have consistently relied for this purpose on a cost of capital that reflects the risks and other market conditions the incumbent actually anticipates.

(50) Even Dr. William Taylor, an economic witness for Verizon in many of the UNE pricing cases since 1996, has acknowledged this distinction. Testifying in a 1996 UNE proceeding in Virginia, Dr. Taylor dismissed the notion that forward-looking pricing methodologies require a departure from the traditional approach of determining the cost of capital in light of the *actual* competitive risks of the regulated enterprise. Dr. Taylor conceded

²¹ *Bell Atlantic-Delaware*, 80 F.Supp.2d 218 (D. Del. 2000) at 240 n. 19 (citation omitted) (emphasis added).

²² *See, e.g.*, James C. Bonbright, *Principles of Public Utility Rates* (1961), pp. 93-108.

that “it is not unheard of for regulators to set prices in noncompetitive markets that replicate the prices that would result from a competitive market.” Moreover, he conceded, “it is possible for a regulatory standard which sets rates at competitive levels to coexist with an environment in which *the regulated firm faces less competitive risk than a competitive firm would face*. . .”²³

(51) Thus, it is my understanding that this Commission could endorse the way in which state regulators, almost without exception, had interpreted the *Local Competition Order* prior to the issuance of the *Triennial Review Order*. In other words, I am not aware of any legal or regulatory barrier to a forward-looking cost methodology that employs, as one input, a cost of capital estimated using current market data that reflect investors’ “real-world” perception of the risks ILECs face today and in the foreseeable future.

b. Any Attempt At Consistency Must Specify The Right Competitive Paradigm—A Contestable Market; Under That Paradigm, The Relevant Risks Could Be Even Lower, and Certainly Would Be No Higher, Than Those Already Reflected In “Real-World” Data Concerning The ILECs’ Cost Of Capital.

(52) The notion that the current TELRIC standard implies a high level of competitive risk is also odds with the theoretical underpinnings of TELRIC itself. The relevant economic paradigm that underlies the TELRIC standard is not perfect (or near-perfect) competition, with multiple facilities-based competitors, but perfect contestability, a more general and robust model of competition. As Verizon has conceded, “one of the assumptions of TELRIC . . . is that the market is perfectly contestable.”²⁴

²³ *Ex Parte to Determine Prices Bell Atlantic—Virginia, Inc. Is Authorized to Charge Competing Local Exchange Carriers in Accordance with the Telecommunications Act of 1996 and Applicable State Law, Virginia State Corporation Commission*, Case No. PUC970005, Tr. (11/29/00) 580-81 (Taylor) (emphasis added)).

²⁴ CC Docket Nos. 00-218, 00-249, and 00-251 (VA Arb.) Tr. 3587 (Prof. Vander Weide).

(53) A contestable market is a market in which entry and exit are instantaneous, costless, frictionless, and without sunk costs.²⁵ In a perfectly contestable market, a single firm can supply the entire market at any one time (thereby fully capturing available economies of scale and scope), but cannot earn any supracompetitive returns without losing its entire market share, instantaneously, to a competitive entrant.²⁶ For the reasons explained by Professor Willig in his separate declaration for AT&T, the relevant risk in a perfectly contestable market—the market whose performance the TELRIC standard seeks to emulate—would be even lower than the risks that incumbent LECs currently face going forward.

(54) Precedent in other agencies adopting other “scorched node” cost models for setting rates confirms that consistency with a long run forward-looking cost methodology does not require the assumption of high competitive risk. The stand-alone cost (“SAC”) test, the TELRIC-like cost standard used since 1985 by the Interstate Commerce Commission (“ICC”) and its successor, the Surface Transportation Board (“STB”), to regulate rates paid by captive rail shippers, illustrates this fact. As implemented by the ICC and the STB, the SAC test combines the forward-looking cost assumptions of perfect contestability with a cost of capital based on the competition and risks that the incumbent carriers actually face.²⁷

²⁵ *Accord, Coal Rate Guidelines—Nationwide*, 1 I.C.C.2d 520, 528-29 (1983), *aff’d*, *Consolidated Rail Corp. v. United States*, 812 F.2d 1444 (3rd Cir. 1987). “The notion of contestable markets offers a generalization of the notion of purely competitive markets, a generalization in which fewer assumptions need to be made to obtain the usual efficiency results. Using contestability theory, economists no longer need to assume that efficient outcomes occur only when there are large numbers of actively producing firms . . . *What drives contestability theory is the possibility of costlessly reversible entry.*” William J. Baumol, John C. Panzar and Robert D. Willig, *Contestable Markets And the Theory of Industry Structure* xiii (rev. ed. 1988) (emphasis added); *accord, Coal Rate Guidelines*, 1 I.C.C.2d at 528.

²⁶ *Coal Rate Guidelines*, 1 I.C.C.2d at 528-29, 543.

²⁷ *See Coal Rate Guidelines—Nationwide*, 1 I.C.C.2d 520, 534-37 (1985), *aff’d*, *Consolidated Rail Corp. v. United States*, 812 F.2d 1444 (3rd Cir. 1987) (implementing stand-alone cost test with cost of capital based on conventional DCF or CAPM analyses of risks and capital costs

(55) By contrast, importing cost of capital assumptions into TELRIC based on the paradigm of perfect competition, or competition from numerous facilities-based entrants, could lead to hopeless inconsistencies. Effective competition from multiple facilities-based competitors tends to drive prices down toward marginal cost; and perfect competition results in prices that equal marginal cost exactly. Local telephone networks, however, have large sunk costs and economies of scale and scope. For firms with this cost structure, marginal costs are well below average long-run incremental costs. Hence, a UNE pricing model that replicated the performance of a perfectly competitive market, or any telephone market with multiple facilities-based competitors, would not remotely compensate even an efficient provider for the cost of the facilities used to provide the UNEs.²⁸

(56) The logical incoherence of applying a high-risk cost of capital to the TELRIC standard became clear in the Virginia arbitration proceedings. Verizon's own cost of capital witness, Dr. James Vander Weide, acknowledged this when asked to specify the level of competition dictated by consistency with the TELRIC standard. In response, he admitted that the degree of competition could be anywhere on the continuum from atomistic competition to a duopoly.²⁹ As I noted above, however, Dr. Vander Weide did agree that the pertinent assumption is a *contestable* market. To the extent that the Commission seeks consistency in the

actually foreseen by incumbent railroad carriers).

²⁸ William J. Baumol, John C. Panzar and Robert D. Willig, *Contestable Markets And the Theory of Industry Structure* xiii (rev. ed. 1988) (emphasis added). It is widely recognized that competition in such conditions can be "wasteful." See, e.g., Sidney Shapiro & Joseph Tomain, REGULATORY LAW AND POLICY 189-92 (1993). As Professor Kahn has stated, "[w]hen the entire demand can most efficiently be supplied via a single set of telephone poles . . . it becomes inefficient to duplicate them and to have two companies digging up the streets at various times instead of one." Alfred E. Kahn, II THE ECONOMICS OF REGULATION 121-22 (1970). .

²⁹ VA Arb. Tr. at 3554-56.

competitive assumptions underlying the cost of capital and other UNE cost inputs, it should seek to embody the risk characteristics of a contestable market across the board in UNE pricing.

c. The Degree Of Competition Does Not Translate Directly Into A Degree Of Risk For Which Investors Require Compensation.

(57) In its *Virginia Arbitration Decision*, the Commission's Wireline Competition Bureau attempted to translate the guidance of the *Triennial Review Order* into a specific methodology and set of assumptions for a cost of capital analysis.³⁰ The Bureau's discussion reflects the underlying premise that the *Triennial Review Order's* guidance to assume a level of risk associated with facilities-based competition automatically translates into a higher cost of capital than exists for the ILECs today, given the current paucity of facilities-based competition.³¹ This premise is incorrect.

(58) There is no one-to-one correspondence between the degree of competition a firm faces and the investor-required return for a firm. By definition, company-specific risks are unsystematic (diversifiable) risks, which are irrelevant to the determination of the return necessary to compensate investors.

(59) A rational investor can select a diversified portfolio of stocks and bonds that is immune to unsystematic risks (random events, which may be specific to one or only a few

³⁰ Memorandum and Order, *In the Matter of Petition of WorldCom, Inc., et al., Pursuant to Section 252(e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia, Inc., and for Expedited Arbitration*, CC Docket Nos. 00-218, 00-249, and 00-251 (released Aug. 29, 2003) ("*Virginia Arbitration Order*") ¶ 5.

³¹ See, e.g., *id.* ¶¶ 93-94. At least one state, Pennsylvania, has taken action to increase the UNE cost of capital specifically as a result of the *Virginia Arbitration Order's* interpretation of the *Triennial Review Order*. The cost of capital increased from 9.83 percent (reaffirmed in the Pennsylvania PUC's *Tentative Order* of November 4, 2002) to 12.37 percent (adopted in the PA PUC's final order in the same docket, issued on December 11, 2003; see pp. 52-62).

firms). As Dr. Selwyn discusses further in his accompanying declaration, investors can include in their portfolios securities for a broad range of the competing firms in an industry, thereby canceling out the effects on their overall earned return of the competitive fortunes of any one firm. Therefore, investors do not require compensation for unsystematic risk—including *company-specific risks of adverse competitive results*. Financial models are explicitly and correctly designed to ignore unsystematic risk in their estimation of the cost of capital.

(60) Systematic risks, on the other hand, affect all firms simultaneously and are caused by macroeconomic events such as sudden changes in inflation, growth, and interest rates. Financial models such as the CAPM, which I discuss further below, capture these systematic risks and eliminate the need for qualitative analyses such as those on which the ILECs typically rely in attempting to justify an increased cost of capital assumption.

(61) Dr. Selwyn illustrates the wide variations in the betas (a measure of systematic risk) for industries subject to a significant degree of competition. Some such industries have betas well above the average market beta of 1; others exhibit much less than the average systematic risk in the market as a whole. These variations reflect the industries' differing degrees of exposure to economy-wide or macroeconomic forces, which produce systematic risk of the type for which investors require compensation.

(62) Thus, in determining the cost of capital input for a UNE cost study, it is far more important to capture the ILECs' exposure in their UNE line of business to systematic, macroeconomic risk (a risk that is below-average, relative to other firms and industries, as Dr. Selwyn demonstrates) than it is to chase after the ephemeral effects of nonsystematic risk such as the risks associated with facilities-based competition. For similar reasons, the California Public Utilities Commission has concluded that, "in determination of risks that deserve compensation

from ratepayers, we should give little weight to risks that are diversifiable.”³² This conclusion applies with equal force to the cost of capital for which competitors should compensate ILECs through the price of UNEs.

(63) Moreover, in evaluating the competitive risk of supplying UNEs, the Commission must take care to distinguish the relevant risks here—the risks of an incumbent LEC’s *wholesale* business—from the separate, and greater, risks of *retail* local telephony. Indeed, in *Bell Atlantic-Delaware, Inc. v. McMahon*, 80 F.Supp.2d 218, 240-241 (D.Del. 2000), the court upheld the decision of the Delaware PSC to reject Verizon’s cost of capital analysis in part because of its failure to distinguish between wholesale and retail risk:

In assessing Bell’s case for an elevated cost of equity, the Hearing Examiners criticized the testimony of Bell’s expert, Dr. James Vander Weide. The Examiners noted that Vander Weide based his cost of equity on the risk associated with Bell’s retail business instead of on the future demand for Bell’s network elements that it will sell at *wholesale*. AT&T’s expert, Bradford Cornell, also criticized Vander Weide’s analysis as “ignor[ing] the critical fact that the business at hand in this proceeding is *not* local retail phone service that already exists, but rather the new business of leasing of network elements at *wholesale* for use in providing competitive phone services to an existing *retail* market.” [citation omitted] The distinction between wholesale and retail is crucial.

Retail competition is competition for the end user of telephone service. That sort of competition is not at issue when determining the risks associated with leasing unbundled network elements (*e.g.*, loops and switches) at wholesale. The risks associated with leasing “bottleneck” network elements at wholesale is less than that associated with competition for retail service. *See Local Competition Order* ¶ 702, at 353 (noting that network elements “generally are bottleneck, monopoly services that do not now face significant competition”). This is so because Bell often is the only provider of these network elements, and it is to Bell that new entrants must come to lease or purchase loops, switches, and other network elements. Thus, even if retail competition intensifies, Bell’s prominence as a wholesale provider of network elements will remain largely unaffected—at least until new entrants build their own networks. [footnote omitted] Accordingly, the Hearing Examiners correctly rejected Vander Weide’s testimony as impermissibly

³² *Sierra Pacific Power Company*, Application 94-09-005 *et al.*, Decision 94-11-076, 158 P.U.R.4th 217, 232-233 (California PUC 1994).

attributing the risks of retail competition to the competition in the sale of unbundled network elements. *See Local Competition Order* ¶ 691, at 348 (explaining that, “[o]nly those costs that are incurred in the provision of network elements in the long run shall be directly attributable to those elements”).

(64) ILEC cost of capital witnesses have asserted that the risks associated with the provision of UNEs actually exceed the risks of the ILECs’ retail operations, but these claims are strained, at best. The extant facilities-based local competition almost all occurs at the retail level, generally from carriers that use their own switches in combination with the incumbents’ loops (a so-called UNE-L strategy) and to some extent from intermodal competitors such as cable telephony providers. The Commission’s *Triennial Review Order* acknowledged the dearth of wholesale providers of local switching³³ and that third parties such as cable providers are not providing wholesale access to their alternative loop facilities.³⁴ Thus, even if it were appropriate to base assume a hypothetical world in which there are multiple facilities-based providers of telephone services, it is far from clear that competition would extend beyond the retail level to multiple wholesale providers competing for UNE customers.

d. The ILEC Company-Wide Cost Of Capital Already Reflects A Risk Premium Above The Actual Cost Of Capital Of The UNE Business And Should Be A Ceiling On The UNE Cost Of Capital Assumption.

(65) Even SBC’s lead cost of capital witness in recent UNE proceedings, Dr. William E. Avera, has stated that in recent testimony that “SBC’s stock is a logical starting point to estimate the cost of equity for the SBC LECs, including Illinois. While some SBC subsidiaries may have risks that are higher or lower than the LECs, the diversified portfolio of SBC is likely

³³ *Triennial Review Order* ¶ 442.

³⁴ *Id.* ¶ 233.

to be of similar risk given the predominance of local telephone service and related activities in SBC's business."³⁵

(66) There is reason to believe that Dr. Avera's assessment errs on the side of *overstating* the risk of UNE operations relative to the company-wide risks of the ILECs (which include not only retail local exchange risks, but also risks related to diversified wireless, broadband, long distance and other nonregulated operations). The econometric analysis of RBOC betas presented in Dr. Selwyn's declaration suggests that the RBOCs' betas increase in tandem with the percentage of such diversified operations, suggesting that the company-wide betas are in fact *higher* than the betas for the retail and wholesale local exchange operations.

(67) The Commission should give such quantitative evidence far greater weight than any qualitative claims that the ILECs present. As the Commission has observed elsewhere, "Market-based cost-of-capital methodologies incorporate the capital markets' assessment of *all* the forms of risk, including risk associated with a changing legal and regulatory environment."³⁶ Examination of company betas is a key component of the one such market-based cost-of-capital methodology, the CAPM. Because the other components of a CAPM analysis are identical whether one is considering a single line of business or the company as a whole, Dr. Selwyn's finding that the betas for the local exchange operations of the RBOCs are lower than the betas for the firms as a whole strongly suggests that the investor-required return for the ILECs as a

³⁵ Illinois Commerce Commission Docket No. 02-0867, SBC Illinois Ex. 12.0, Direct Testimony of William E. Avera, December 23, 2002, p. 8.

³⁶ FCC 98-222, *Notice Initiating a Prescription Proceeding and Notice of Proposed Rulemaking*, in CC Docket No. 98-166, In the Matter of Prescribing the Authorized Unitary Rate of Return for Interstate Services of Local Exchange Carriers, released October 5, 1998 (hereinafter, "*FCC Rate of Return Notice*"), at ¶ 5 (emphasis added).

whole represents a cap on the required return for the UNE line of business—and a high one at that.

2. The Principle Of Nondiscrimination Dictates That The Cost Of Capital Input For A UNE Cost Study Cannot Reflect The Risks Associated With A Degree Of Competition That Does Not Exist And Is Not Expected To Materialize.

(68) Moreover, to base UNE costs and prices on the counterfactual assumption that the ILECs face intense facilities-based competition in the business of supplying UNEs seems inconsistent with the nondiscrimination requirement identified in Section 252(d)(1)(A)(ii) of the 1996 Act. Nondiscrimination dictates that the prices paid by CLECs to the incumbent must be the same as the implicit prices (*i.e.*, economic costs) that the incumbent incurs in supplying the same elements to itself for use in providing its own retail service. The capital costs that the incumbent incurs when it engages in such self-provisioning reflect that risks that it actually anticipates, not the higher capital costs of a riskier, more competitive business.

(69) Requiring CLECs to pay prices for UNEs that are inflated by markups designed to compensate ILECs for competitive risks that they do not actually incur would drive a cost wedge between the costs incurred by ILECs in competing for retail customers, and the costs incurred by CLECs. This is flagrant discrimination—and a barrier to entry.

(70) Interpreted in this manner, the nondiscrimination requirement of the Act presents an additional reason to believe that the firm-wide cost of capital for the ILECs constitutes a cap on the cost of capital input for a UNE cost study. As I have explained in detail above, this cap likely exceeds—by a substantial margin—the cost of capital for the UNE line of business, which is the relevant cost of capital.

B. The “Stranded Investment” and “Regulatory Risk” Theories Advanced By The ILECs Provide No Basis For Further Inflating The Cost Of Capital.

(71) The Commission asks parties to comment on the connection between the potential for stranded investment and the appropriate cost of capital assumptions for a UNE cost study. (*NPRM* ¶ 87). There is no reason for the Commission to adopt, or encourage states to adopt, a higher cost of capital input to reflect stranded investment risk.

(72) The ILECs raised this specter before in the debate leading to the 1996 *Local Competition Order*. The Commission rightly rejected the ILEC arguments then,³⁷ and it should do so again now. ILECs have not pursued long-term contracts for UNEs, which could mitigate stranded investment risk.³⁸ At least one ILEC of which I am aware (ACS in Anchorage, Alaska) has failed to pursue the long-term contract option even where its largest UNE-based competitor (GCI) has obtained a significant market share and is positioning itself, in the absence of an acceptable UNE pricing agreement, to transfer retail customers off of the incumbent’s loop facilities and onto the competitor’s newly constructed cable telephony plant. Despite this situation, ACS-Anchorage is actually seeking to *increase* its UNE prices, which almost certainly will push GCI off of the incumbent’s facilities if GCI is, in fact, able to surmount the remaining operational issues concerning its cable telephony plant.

(73) The ILECs may argue that current UNE prices are too low to warrant entering into long-term contracts. But, that claim ignores the possibility that CLECs would be willing to pay more than current regulated prices in return for the certainty and stability provided by a long-term contract. And, the ILEC argument rings hollow when one considers that facilities-based competition has the potential to drive retail prices down to marginal cost—a much lower price

³⁷ *Local Competition Order* ¶¶ 686-89.

³⁸ See *NPRM* at ¶ 87, citing *Local Competition Order* ¶ 687.

point than is achievable through UNE-based competition. Moreover, a prudent ILEC should be willing to enter into a long-term contract (for suitably limited quantities of facilities) at prices well below average long-run incremental cost because obtaining some margin above operating costs for the use of sunk investment is better than obtaining no revenues whatsoever.

(74) The only reasonable interpretation of the lack of long-term contracts is that the ILECs do *not* believe that competitors will be able to engage in widespread facilities-based competition in the foreseeable future. Hence, eliminating access to UNEs altogether or driving the price of those UNEs up via changes to the TELRIC pricing methodology is a rational competitive strategy. It is, however, a competitive strategy that defeats the pro-competitive purposes of the Act and one that this Commission should nip in the bud.

(75) In the *Triennial Review Order*, the Commission also rejected—and properly so—the addition of a further return premium for “regulatory risk.” In Paragraph 683 of the *Triennial Review Order*, the Commission specifically found that incumbent LECs would be fully protected against any asymmetry in the risks and rewards of investment in assets used to provide UNEs by giving ILECs an opportunity to propose a higher cost of capital for investment “associated with new services that might be provided over certain types of facilities”—*i.e.*, *broadband services*.³⁹ But, as I explained above, the network elements that *Order* requires incumbent LECs to unbundle are not “associated with new services” in this sense. The narrowband-only loop capacity that the ILECs’ unbundling requirements under the *Triennial Review Order* is the antithesis of a “new” service or technology, and the provision of this capacity clearly falls on the low end of the risk continuum.

³⁹ *Triennial Review Order*. ¶ 683 & n. 2051.

(76) There is further reason why no separate regulatory risk premium would be warranted: whatever degree of regulatory risk incumbent LECs experience in supplying UNEs has already been reflected in the ILECs' stock and bond prices. The Commission and state commissions have set UNE prices under the rubric of the *Local Competition Order*—and, in general, rejected the inflated cost of capital measures proposed by the incumbent LECs—for seven years. The nature of these standards has been no secret to the industry and its investors. Whatever regulatory risks the TELRIC standards may create should be fully reflected in the returns demanded by investors, and no return additive for regulatory risk is warranted. As the U.S. Court of Appeals for the D.C. Circuit reasoned in denying the incumbent LECs' challenge to an earlier Commission decision not to adopt a risk premium in analogous circumstances, “because investors are aware of its rate base policies, the agency’s market-based methodologies for determining the rate of return will produce a rate high enough to compensate for that risk.”⁴⁰

(77) The same argument applies to any cost of capital additive to compensate for the “risk of stranded investment.” Whatever risk of this kind the ILECs face in supplying UNEs—and, the revised impairment requirement recently adopted by the Commission in its *Triennial Review Order* makes the risk even more remote than before—the risk has been disclosed to investors for several years. So has the analogous, but greater, risk of stranded investment in the incumbent LECs' retail, long distance, wireless, foreign and other non-regulated lines of business. Accordingly, all of these risks are already reflected in the returns demanded by investors.

⁴⁰ *Illinois Bell Tel. Co. v. FCC*, 988 F.2d at 1263; see also *FCC Rate of Return Notice* ¶ 5.

C. The Commission Should Endorse Standard Financial Methodologies That Appropriately Measure The Forward-Looking Cost Of Capital.

(78) The Commission's *Notice* (§ 85) invites comments on the appropriate methodologies for measuring each component of the cost of capital. As I explain in the following sections, the Commission should endorse standard financial methodology that appropriately measure the forward-looking cost of debt and equity and that properly estimate the forward-looking capital structure.

1. The DCF And CAPM Methodologies Can Both Provide Reasonable Estimates Of The Cost Of Equity.

(79) For the cost of equity, both the DCF model and the CAPM, if properly designed and run with appropriate inputs, can generate reasonable outputs. I discuss each in turn.

a. The DCF Model

(80) The DCF model calculates investors' required rates of return for holding stock under the assumption that today's stock price for a company is equal to the present value of the cash outlays accruing to that company's stockholders. These cash outlays include both dividend payments and capital appreciation in the value of shares held. According to the DCF logic, investors implicitly require high returns from stocks with large current dividend yields⁴¹ and high dividend growth rates. The formula for the DCF can be expressed as:

$$P = \frac{CF_1}{(1 + k_E)} + \frac{CF_2}{(1 + k_E)^2} + \dots + \frac{CF_n}{(1 + k_E)^n} + \dots$$

where:

P = the current market price of a share of the company's stock;

CF_n = the dividend or cash flow expected to be received in period n ; and

k_E = the cost of equity capital.

(81) The DCF model requires strong assumptions about the future dividends and growth rate of the company being studied. Strictly speaking, a researcher employing the DCF model must forecast the cash flows accruing to shareholders that extend into the *indefinite* future. Such forecasts are required regardless of the form of the DCF model chosen by the researcher.

(82) A simple but unrealistic assumption about the future is that it will look exactly like the present—*i.e.*, the current dividend yield on the company's stock and current forecast of the company's growth will continue to be valid forever. This assumption is made in what is called the constant-growth or one-stage DCF model (one-stage meaning that the analysis assumes that there is a single, constant growth rate in perpetuity). However, as a logical matter, a company cannot forever grow at a rate different from the economy unless the company either shrinks to a vanishingly small and insignificant fraction of the economy or it eventually takes over the entire economy. For precisely this reason, the *Virginia Arbitration Order* unequivocally rejected use of the constant-growth form of the DCF methodology as advanced by Verizon witness Dr. Vander Weide.⁴²

(83) In lieu of the one-stage constant-growth DCF model, many economists recommend a more realistic model that involves multiple (typically, two or three) stages of company growth. For example, Ibbotson Associates supports the use of a three-stage DCF mode. The Ibbotson Associates *2003 Yearbook* indicates that “[o]ne of the advantages of a three-stage discounted cash flow model is that it fits with life cycle theories in regards to

⁴¹ The dividend yield is simply the dividend paid to shareholders divided by the stock price.

⁴² *Id.* ¶ 73. (“Verizon’s use of the constant growth DCF model to estimate the cost of equity capital for its S&P proxy group stretches the reasonable limit of its use.”)

company growth. ... Typically, the potential for extraordinary growth in the near term eases over time and eventually growth slows to a more stable level.”⁴³

(84) Ibbotson Associates uses a three-stage DCF model, which assumes that a company’s growth rate gradually converges toward the overall growth rate of the economy. Thus, this authority (among others)⁴⁴ provides justification for the assumption that the third or final stage of growth should equal the growth rate of the economy as a whole and also provides justification for the assumption of an intermediate (second) stage in which near-term growth converges toward the long-term U.S. economy growth rate, as estimated using forecasts such as the consensus forecast published by the Philadelphia Federal Reserve Bank.⁴⁵

(85) Most multi-stage DCF models include an initial stage that lasts five years, which is the duration of the longest analyst earnings growth forecasts generally available. The cash flows of the companies being are assumed to grow at a rate equal to the mean of analyst forecasts over this five-year period.⁴⁶ Five-year forecasts are widely available and commonly referenced

⁴³ Ibbotson Associates, *SBBI: Valuation Edition, 2003 Yearbook*, (hereinafter “Ibbotson Associates 2003 Yearbook”), p. 62.

⁴⁴ See, for example, William F. Sharpe, Gordon J. Alexander and Jeffrey V. Bailey, *Investments*, Englewood Cliffs, N.J.: Prentice Hall, 1995 (5th ed.), pp. 590-591; Aswath Damodaran, *Damodaran on Valuation: Security Analysis for Investment and Corporate Finance*, New York: John Wiley & Sons, 1994, pp. 99-101; Tom Copeland, Tim Koller, and Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, New York: John Wiley & Sons, 1994, p. 295; Bradford Cornell, “Alternate Approaches Available for DCF Method,” *Natural Gas*, November 1994, pp. 13-17.

⁴⁵ Philadelphia Federal Reserve Bank, *Survey of Professional Forecasters*. The long-term forecast appears in the first quarterly release of the *Survey* each year. The *Survey* is available on-line at www.phil.frb.org.

⁴⁶ As a practical matter, economists typically assume that a company’s dividends grow at the same rate as its earnings, for which forecasts are commonly available. This assumption is equivalent to the claim that a firm does not change its dividend policy over time—*i.e.*, that it pays a constant fraction of its earnings to shareholders in the form of dividends. This simplification permits use of analysts’ consensus earnings forecasts to estimate dividend growth rates.

by investors; hence, the average analysts' forecast likely provides a reasonable proxy for investors' growth expectations over the initial five-year horizon. (If anything, use of such forecasts may overstate investors' current expectations for company growth, given recent publicity about the unwarranted optimism in analysts' forecasts.⁴⁷)

(86) Longer-range forecasts, however, are generally available only for the economy as a whole. In the second stage of a three-stage DCF analysis, economists typically assume that each company's growth rate will gradually converge toward the future rate of overall economic growth (forecasted using the Federal Reserve Bank of Philadelphia's *Survey of Professional Forecasters*). The convergence of company growth to economic growth in this stage guarantees that none of the companies analyzed will either take control of the entire economy or become an insignificant part of the economy in the future, thereby eliminating the fatal flaw in the constant-growth form of the DCF.

(87) The recent *Virginia Arbitration Order* of the Wireline Competition Bureau declined to credit equity cost estimates generated by the three-stage DCF model on the ground the precise trajectory of earnings growth rates in the second and third stages of the model cannot be established with certainty.⁴⁸ This outcome is illogical. In fact, both the magnitude and the

⁴⁷ The excessive optimism of analysts' growth forecasts is well documented in the academic literature as well. *See, for example*, Richard B. Boebel, Mustafa N. Gultekin, and Robert S. Harris, 1993, "Financial Analysts' Forecast of Corporate Earnings Growth: Top Down versus Bottom Up," in John B. Guerard and Mustafa Gultekin, *Handbook of Security Analyst Forecasting and Asset Allocation*, at 185-92.

⁴⁸ The Bureau offered a second reason for rejecting the CLECs' three-stage DCF model: a Verizon analysis of the model purportedly showing that it produces "lower cost of equity estimates for high-risk companies than it does for low-risk companies," an anomaly lacking any "rational explanation . . . other than flaws in the DCF model." *Virginia Arbitration Order* ¶ 76. AT&T and MCI showed, however, that the supposed anomalies were statistical illusions resulting from methodological errors in Verizon's comparisons, not from any inherent defect in the three-stage DCF methodology itself. The Bureau Opinion simply ignored this showing.

pattern of the growth rate assumptions are reasonable models of the inevitable regression of above-average short run rates of earnings growth to the long-run growth rate of the economy. And most widely used multi-stage models produce similar results.

(88) The lack of absolute certainty about the precise path by which a company's short-run projected growth rate will regress to the long-term mean is no ground for a contrary outcome. Assumptions about future earnings growth rates, with their inherent imprecision, are a necessary part of any cost of equity model. Disregarding DCF data entirely merely because there are many possible ways to model the long-term regression to the mean would make the perfect the enemy of the good. Indeed, if perfect foresight were a requisite for acceptance of a cost of equity model, the Commission would have to reject all such models.

b. The CAPM, If Run With Appropriate Inputs, Also Produces Acceptable Estimates Of The Cost Of Equity.

(89) The CAPM is another widely used method of estimating the cost of equity.⁴⁹ Like the DCF, the CAPM can produce reasonable results if run with appropriate assumptions.

(90) The CAPM assumes investors require high returns for stocks that are sensitive to fluctuations in the overall stock market. The most common measure of a stock's market sensitivity is its beta—a number that equals the covariance⁵⁰ of a stock's return with the market return divided by the total variance of the stock's return.

⁴⁹ *Virginia Arbitration Order* ¶ 99.

⁵⁰ Covariance refers to the tendency of two variables to move together, independent of where the two variables happen to be centered (that is, their average absolute value). In this case, the two variables are the return on the stock of a particular company and the return on the market as a whole.

(91) The CAPM estimate of the investor-required return on a stock can be expressed as:

$$k_E = r_f + (\beta \cdot ERP)$$

where:

k_E = the cost of equity for the company;

r_f = the expected return of the riskless or “risk-free” asset;

β = the beta of the company’s stock; and

ERP = the expected equity risk premium.

Thus, there are three key inputs to the CAPM: the risk-free interest rate, beta (the measure of risk), and the equity risk premium (the difference between the expected risk-free return and the expected return for the market as a whole).⁵¹

i. The risk-free return

(92) The first input to the CAPM is the risk-free interest rate. The risk-free rate is typically estimated using the current yield-to-maturity for various government securities. The phrase “risk-free” rate is somewhat a misnomer because the securities in question, while largely free of default risk, do carry inflation risk, which increases as the term of the security increases.

(93) In its *Virginia Arbitration Order*, the Bureau adopted as the risk-free interest rate the Treasury yield that best matches the time horizon of each of the equity risk premium estimates it used.⁵² This approach is sound, and I recommend that the Commission endorse the

⁵¹ *Id.*

⁵² *Id.* ¶ 86.

concept that the risk-free rate must match as closely as is possible the time horizon of the equity risk premium used in any CAPM analysis.

ii. The market risk premium

(94) The second input to the CAPM is the market risk premium. This (equity) premium is the difference between the expected returns of the market as a whole and the return on a bond without default risk (the “risk-free” return). For this component of the CAPM, the *Virginia Arbitration Order* used the arithmetic mean of the Ibbotson Associates estimated equity risk premium for the period 1926 to the present.⁵³ This is a form of an historical equity risk premium.

(95) Because estimation of the cost of capital is an inherently forward-looking exercise, the use of historic risk premium data is valid only if the “averaged realized return” is a good “proxy for expected return.”⁵⁴ There is now substantial evidence, however, that the forward-looking equity risk premium is lower than the historical estimate based on the Ibbotson data series for 1926-1999.⁵⁵ Even Roger Ibbotson, Professor of Finance at Yale and President of

⁵³ *Id.* ¶¶ 83-85. To be more specific, the Bureau averaged the results of two CAPM analyses: one using the “short-horizon” market risk premium (calculated with respect to a riskless rate of 30-day Treasury bills) and the other using the “long-horizon” market risk premium (calculated with respect to a riskless rate of 20-year U.S. Treasury bonds). *Id.* ¶ 99.

⁵⁴ *Id.* ¶ 85.

⁵⁵ See, e.g., Eugene Fama and Kenneth French, “The Equity Premium,” 57 *J. of Finance*, no. 2 (2002) at 637-59 (estimating an equity risk premium of approximately 4 percent over the six-month LIBOR interest rate); James Claus and Jacob Thomas, “Equity Premia as Low as Three Percent? Evidence from Analysts’ Earnings Forecasts for Domestic and International Stock Markets,” 56 *J. of Finance*, no. 5 (2001), at 1629-66 (estimating an equity risk premium of about three percent over the 10-year Treasury bond rate); and William Gebhardt, Charles Lee and Bhaskraram Swaminathan, “Toward an Implied Cost of Capital,” 39 *J. of Accounting Research* 135-76 (2001) (also estimating an equity risk premium of about three percent over the 10-year Treasury bond rate).

Ibbotson Associates, has agreed that the historical equity premium estimates no longer reflect investors' expectations.⁵⁶

(96) Under the circumstances, continued reliance on the 1926-1999 historical risk premium data is arbitrary and irrational. As Alfred Kahn, a frequent witness for the incumbent LECs, has stated in an analogous context, "The fact that future costs are difficult to estimate does not make it rational to cling to past costs, when there is clear reason to believe they are wrong."⁵⁷

(97) Measured over the horizon 1926-2002, the long-horizon version of the Ibbotson Associates historical premium equals approximately 7%⁵⁸—a significantly higher number than the forward-looking equity risk premium advocated by most experts, including the founder and the director of research of Ibbotson Associates themselves. The forward-looking Ibbotson-Chen risk premium estimate (5.9%)⁵⁹ is a full 110 basis points below the corresponding Ibbotson Associates figure for the historical equity risk premium. Nonetheless, this estimate is at the *high* end of forward-looking estimates of the equity risk premium, which average around 4 percent.

(98) Some experts, including respected Harvard finance professor John W. Campbell, believe the forward-looking equity risk premium is well below the four percent figure. Professor

⁵⁶ Roger Ibbotson, "Building the Future from the Past," *TIAA-CREF Investment Forum: Idea Exchange* (June 2002) at 12.

⁵⁷ Alfred E. Kahn, *The Economics of Regulation* 199 (1970).

⁵⁸ The most recent version of this historical risk premium appears in Ibbotson Associates, *2003 Yearbook*, Appendix C, p. 248.

⁵⁹ See Roger G. Ibbotson and Peng Chen, "Long-Run Stock Returns: Participating in the Real Economy," 59 *Financial Analysts Journal*, No. 1, at 88-98 (January/February 2003). The Ibbotson and Chen estimate of 5.90 percent likely overstates the correct forward-looking risk premium because it relies on an intertemporal interpretation of the well-known Modigliani-Miller theory that does not seem to be borne out by real-world data. See Robert D. Arnott and Clifford D. Asness, "Surprise! Higher Dividends = Higher Earnings Growth," at 70-87 of the same journal issue.

Campbell anticipates a shakeout period in which actual equity returns are somewhat *below* debt returns, leading to a long-term expected equity risk premium of only about 1-1.5%.⁶⁰

(99) As these statements indicate, academic economists actively debate the issue of whether historical equity premiums accurately reflect future expected returns of stocks relative to bonds. For example, Fama and French argue that estimates of the equity premium based on historical returns are biased upwards because the expected premium has declined over the past 50 years.⁶¹ When investors' discount rates decline unexpectedly, realized stock returns will exceed expected returns, thereby biasing historical estimates of the equity premium. (The Fama and French models published in 2002 suggest the current equity premium is around 4%.)

(100) The most recent direct estimates of long-run expected equity returns from the *Survey of Professional Forecasters* conducted by the Federal Reserve Bank of Philadelphia average 7.47%.⁶² This average forecast implies an equity premium between 3% and 4%, based on current bond returns, lending further support to the notion that the historical risk premium measured by sources such as Ibbotson Associates does not provide a good proxy for required future returns.

(101) For all of these reasons, I recommend that the Commission endorse the use of a forward-looking, rather than historical, equity risk premium in developing the cost of equity input for UNE cost studies.

⁶⁰ John Y. Campbell, "Stock Returns for a New Century," *TIAA-CREF Investment Forum: Idea Exchange*, June 2002.

⁶¹ Eugene Fama and Kenneth French, 2002, "The Equity Premium," *Journal of Finance* **57**(2), 637-59.

⁶² Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, February 24, 2003, 10-year expected equity return forecasts.

iii. Betas

(102) The third and final input to the CAPM is beta, the measure of a stock's exposure to systematic risk. The beta estimates generally available in the public domain, such as those published by *Value Line*, reflect risks for the company as a whole. As Dr. Selwyn demonstrates in his accompanying declaration, these beta estimates may overstate—perhaps significantly—the systematic risk associated with the UNE line of business that is the focus of the cost of capital inquiry here.

(103) Therefore, I recommend the Commission find that a CAPM analysis using holding-company-level betas for the ILECs provides a ceiling for the cost of equity input in a UNE cost study. In most cases, the appropriate beta for use in a UNE cost of capital study will be *lower* than the current betas reported in *Value Line* or other reputable sources.

2. The Forward-Looking Cost of Debt Should Reflect The Financing Choices That An Efficient Carrier Would Make Today.

(104) A UNE cost study should incorporate a forward-looking cost of debt, which can be estimated by looking at the forward-looking yield-to-maturity for publicly traded ILEC debt.⁶³ Such forward-looking yield-to-maturity data are available from publications such as the Web-based *bondpage.com*.

(105) In recent UNE cost cases, most significant disputes concerning the cost of debt relate to the appropriate debt maturities to reflect in the cost of capital for UNEs. ILEC witnesses have continued to estimate debt costs based on the cost of very long-term bonds (> 25 years). Investors require a higher interest rate to hold these securities than they do to hold long-term bonds with shorter maturities. The choice of such very long-term financing is inconsistent

⁶³ Compare *Virginia Arbitration Order* ¶¶ 66-67.

with the relatively short economic lives that ILECs assume for most of the asset categories in their UNE cost studies.

(106) Economic lives of assets are a ceiling on the term of financing, as two everyday examples illustrate. A car is a relatively short-lived asset that is financed over a period of time less than or equal to its expected economic life. One would be hard-pressed to obtain 30-year financing for the typical family car. In contrast, a home is much longer-lived asset. That means that the maximum duration of financing for a home is often 30 years or even longer. It does not mean, however, that all homes are financed for an equally long period. Fifteen-year, fully amortized mortgages, or even shorter mortgages with “balloon payments” that require homeowners to refinance after, *e.g.*, five or seven years, are quite common.

(107) Similarly, if an ILEC were financing its network anew today, only a fraction of its assets would qualify for the very long-term financing that most ILEC witnesses use as a benchmark for debt costs. Moreover, given the very favorable rates available for bonds such as the 10-year bonds that SBC issued in August 2002⁶⁴ and Verizon New England issued in September 2003,⁶⁵ an efficient carrier might well decide to issue debt for less than the maximum maturity justifiable given its asset lives.

⁶⁴ Richard A. Bravo, “SBC Communications Prices \$1 Billion Debt After Moody’s Rebuke,” *Dow Jones Newswires*, August 14, 2002. This SBC 10-year debt was issued at a coupon rate of 5.875% and a yield-to-maturity of 6.081%. *Id.* As of December 14, 2003, these bonds were publicly traded with a yield-to-maturity of 4.873%, as reported on www.bondpage.com.

⁶⁵ Verizon New England issued \$300 million in 10-year bonds on September 30, 2003 at a coupon rate of 4.75% and a yield-to-maturity of 4.87%. “New Issue: Verizon New England sells \$300 mln notes,” *CBS MarketWatch*, September 30, 2003. As of December 14, 2003, these bonds were publicly traded with a yield-to-maturity of 5.085%, as reported on www.bondpage.com.

(108) In a related matter, disputes have also arisen about the inclusion of short-term (less than one-year maturity) debt in the UNE cost of capital. In recent times, the ILECs' dependence on extremely low cost short-term debt has far exceeded any "working capital" needs that might reasonably be excluded from the UNE cost of capital estimation. Thus, the Commission should make clear that the cost of debt should reflect the forward-looking financing choices of an efficient carrier, and that those financing choices could include short-term debt.

3. The Forward-Looking Capital Structure Should Reflect An Efficient Carrier's Long-Run, Target Capital Structure, Not A Snapshot Of The Current, "Market-Based" Capital Structure.

(109) The relevant forward-looking capital structure is the target capital structure. As Ibbotson Associates states: "Ideally, a firm's target or optimal capital structure should be used in weighting the cost of equity and cost of debt."⁶⁶ This is the relevant capital structure for determining the cost of capital at which investors will provide an efficient amount of funds for the firm's investment projects.

(110) There are two different possible definitions of this concept: (1) the weighting that happens to be produced by current market prices, and (2) the weighting that corporate management currently seeks as its *target* capital structure. The latter is clearly a better standard for estimating forward-looking capital costs for TELRIC. As the District of Columbia PSC found in its recent UNE pricing decision, "Target capital structures are based more on careful management consideration of risks than on current market prices, which can fluctuate for reasons not specifically related to the entity in question."⁶⁷

⁶⁶ Ibbotson Associates, *2003 Yearbook*, p. 14. Ibbotson Associates, significantly, is the same source that the Commission's Wireline Competition Bureau cited in support of the equity risk premium used in its CAPM calculations. *Virginia Arbitration Order*, ¶ 83.

⁶⁷ Order No. 12610, *In the Matter of the Implementation of the District of Columbia Telecommunications Competition Act of 1996 and Implementation of the Telecommunications*

(111) The *Virginia Arbitration Order*, by contrast, adopted a structure of 80 percent equity and 20 percent debt, on the theory that the appropriate capital structure is the forward-looking capital structure of a competitive firm, an inquiry for which the company's book capital structure is irrelevant.⁶⁸ The Bureau defended this capital structure on the ground that the forward-looking cost standard requires use of a capital structure based on market value, not book value.⁶⁹ The economically relevant market weighting, however, is not the market weighting that a company happens to have in any particular short-run period, for this value can vary widely in the short run with short-run fluctuations in the market price of equity. Rather, the relevant market weighting is the *target* weighting of debt and equity that "a rational, informed management team would employ" *over the long run*.⁷⁰ This long-run target weighting almost certainly has much less equity, and much more debt, than the current market weighting.

(112) There is no reason to believe that an efficiently managed firm, even one facing the degree of risk posited by the FCC in the *Triennial Review Order*, would adopt a target capital structure with more than 60 percent equity. Moreover, nothing in the *Triennial Review Order* or the *Virginia Arbitration Order* forecloses adoption of the target structure approach.

(113) Unfortunately, when one is dealing with the capital structure of a hypothetical efficient firm (the construct posed in the *Triennial Review Order*), one cannot simply "ask" the hypothetical firm to identify its target capital structure. Moreover, very few firms provide public

Act of 1996, DSC PSC Formal Case No. 962 (Dec. 6, 2002) at ¶ 161.

⁶⁸ *Virginia Arbitration Order* ¶ 103.

⁶⁹ *Id.*, ¶ 102.

⁷⁰ Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance* 441 (4th ed. 1996).

information about their target capital structures, so it is rarely feasible to “average” the target capital structures of firms such as the ILECs.

(114) There is an alternative approach that provides insight into the “target” or “optimal” capital structure of firms, without direct information about that target. By definition, in an efficient market, a firm’s capital structure will adjust toward its target structure in the long-run. Thus, to determine whether market or book values of equity should be used in weighted-average cost of capital calculations, one needs to know whether market or book equity is a more reliable predictor of a firm’s long-run capital structure.

(115) Respected researchers have found evidence that, in the long run, market equity tends to move toward book equity.⁷¹ These findings at least partially validate book equity as a measure of a firm’s long-run target capital structure. Other researchers, however, argue that high market-to-book ratios also predict future (book) profitability, suggesting market equity is also related to a firm’s target capital structure.⁷² On balance, the academic literature on this topic suggests that the best prediction of a firm’s long-run target capital structure using publicly available data incorporates both book and market information.⁷³

⁷¹ Eugene F. Fama and Kenneth R. French, 1992, “The Cross-Section of Expected Equity Returns,” *Journal of Finance* **47**, at 441; Josef Lakonishok, Andrei Shleifer, and Robert W. Vishny, 1994, “Contrarian Investment, Extrapolation and Risk,” *Journal of Finance* **49**, 1541-78.

⁷² Randolph B. Cohen, Christopher Polk, and Tuomo Vuolteenaho, 2002, “Does Risk of Mispricing Explain the Cross-Section of Expected Returns?” Working Paper, Harvard University. These authors also find that firms with relative high market-to-book ratios have less systematic risk, which would tend to reduce their cost of equity relative to cost that other current observable data suggest.

⁷³ Tuomo Vuolteenaho, 2000, “Understanding the Aggregate Market-to-Book Ratio and Its Implications to Current Equity Premium Expectations,” Working Paper, Harvard University.

(116) In prior UNE cost proceedings, I have used an equal weighting of the market and book capitalization of the ILEC holding companies included in my comparable group to estimate the target capital structure for an efficient UNE provider. The results using recent data have generally been in range of 60% equity and 40% debt.

(117) I have compared my estimated target capital structure to public information about other carriers' target capital structures. In an ongoing Florida collocation proceeding, both Sprint and BellSouth provided specific figures in response to AT&T requests regarding their target capitalization. Sprint indicated that its target capital structure is 60% equity and 40% debt (while denying its applicability to the cost of capital determination).⁷⁴ BellSouth placed its target structure at between 65% equity and 35% debt and 55% equity and 45% debt.⁷⁵ The mid-point of BellSouth's range is a capital structure of 60% equity and 40% debt. Thus, a target capital structure of approximately 60% equity and 40% debt is highly consistent with the publicly stated target capital structures of these major incumbent local exchange carriers.

(118) Even if the Commission were to affirm the *Virginia Arbitration Order's* choice of a snapshot "market-based" capital structure, it should ensure that the market-based capital structure is properly calculated. Most "market-based" capital structure estimates presented in regulatory proceedings estimate the value of debt in the capital structure by looking at its book value, because so little debt is publicly traded. In other words, these "market-based analyses of capital structure" estimate the equity share of total capital by looking at the total market value of equity divided by the sum of the market value of equity plus the book value of debt. This

⁷⁴ Sprint Response to AT&T's Second Interrogatories, No. 13, in Florida Public Service Commission Docket Nos. 981834-TP and 990321-TP.

⁷⁵ BellSouth Response to AT&T's Sixth Interrogatories, No. 48, in Florida Public Service Commission Docket Nos. 981834-TP and 990321-TP.

approach yields a reasonable estimate of the true market-based capital structure only if current interest rates are approximately equal to the interest rates prevailing when the embedded debt was originally issued.

(119) When interest rates fall, however, the stream of interest payments generated by debt that was issued at a time of higher interest rates is particularly valuable to investors. They are willing to pay more than the face value of the outstanding debt to obtain the right to this stream of cash flows; that is, the price of a bond increases to the point that its yield falls to a level equal to the current investor-required return. As the price of the bond increases, the market value of the outstanding debt increases. This pattern is easily observable in the current prices publicly traded ILEC bonds, most of which are trading above “par value.” Hence, a “market-based” capital structure that combines the current market value of equity with the *book* value of debt overstates the equity proportion of the true market-based capital structure at times such as the present when current interest rates generally are lower than the rates at which the debt was issued. This provides an additional reason not to rely on the snapshot “market-based” capital structures presented in most regulatory proceedings.

D. Simplifying Assumptions And Procedures (*NPRM* ¶ 88)

(120) The Commission asks whether it should prescribe a single cost of capital value for use in all states.⁷⁶ A single cost of capital proceeding at the federal level could also reduce parties’ litigation costs, which is inherently pro-competitive. Nonetheless, states rightly may be concerned that a single federally determined cost of capital would eliminate any opportunity to reflect state-specific considerations, where such considerations are relevant.

⁷⁶ *NPRM*, ¶ 88.

(121) In lieu of a federally determined cost of capital, the Commission could simplify state UNE litigation by endorsing the specific risk assumptions and methodologies that I have outlined above in this declaration. That is, the Commission should direct states to determine the cost of capital using methodologies that incorporate investors' expectations about the risks that the ILECs will face in their UNE lines of business. Appropriate methodologies include the multi-stage DCF model and the CAPM approaches to estimating the cost of equity, described above; use of the ILEC yield-to-maturity for publicly traded debt (with an average term that does not exceed the average economic life of the capital investments assumed in the UNE cost study); and use of a long-run target capital structure.

E. UNE-Specific Cost Of Capital

(122) The Commission asks whether the cost of capital input should vary among UNEs. *Notice* at ¶ 89. Although I agree in concept that, *e.g.*, the risks associated with loops may differ from those associated with switching, I question whether the available data would provide any reasoned basis for distinguishing between these two (or any other) UNEs with respect to the investor-required return. There is no meaningful variation among firms or over time in the extent to which they provide the various UNEs comparable to the differences in the extent of diversification that enabled Dr. Selwyn to approximate the effects of lines of business other than local exchange service on the risk profile of the RBOCs. Unless there is evidence to support such distinctions, it will be most useful for the Commission and state regulators to focus on determining a cost of capital input for UNEs in general, rather than separate costs of capital for individual UNEs. In my view, it is more important to ensure that the cost of capital input for *all* UNEs properly reflects the relatively low risk of UNEs as compared to other ILEC lines of business than it is to identify separate cost of capital inputs for each of these (all relatively low risk) UNEs.

III. NON-RECURRING COSTS AND COSTS FOR ACCESS TO OSS (*NPRM* ¶¶ 114–130)

(123) There are at least two respects in which non-recurring charges for UNEs—*i.e.*, one-time charges associated with provisioning the specific UNEs requested by a new entrant—have particular economic significance. First, non-recurring charges are significant because they represent an up-front cost of doing business that new entrants will incur in conjunction with each customer that they win from incumbents. By contrast, incumbents need not incur such charges to maintain their monopoly legacy customers. Second, as the *NPRM* notes (¶ 114), non-recurring charges can be a serious barrier to entry because they are, in effect, entrance fees.

(124) ILECs have strong incentives to inflate these non-recurring charges to impede competition, and they have routinely done so in a number of ways. For example, ILECs have charged for manual order processing even when it was relatively simple and straightforward to develop a mechanized order process. ILECs have also charged for loop conditioning even when their own network guidelines—in place for twenty years or more—called for them to build plant without load coils and other inhibitors that would impede the use of the loop to provide Digital Subscriber Line (“DSL”) services. As detailed below, the Commission should clarify its non-recurring charge rules to discourage these abuses.

(125) As an initial matter, however, the Commission should reject the ILECs’ proposal that the Commission endorse a “real-world” costing standard that takes the ILECs’ existing networks as a given in determining the costs of provisioning UNEs. That approach, whether characterized as an embedded cost approach or a short-run incremental cost approach, would violate the most basic principles of efficient forward-looking cost-based pricing, create untenable internal inconsistencies in the Commission’s UNE pricing rules, and virtually ensure that non-recurring charges become absolute barriers to effective competition.

(126) The ILECs’ “real-world” short-run non-recurring costs are, for the most part, expenses associated with equipment purchased years or decades ago. These expenses bear no necessary resemblance to the non-recurring costs associated with the least-cost, most-efficient technology that the ILECs are purchasing today and that must be reflected in the recurring charges calculated under any rational long-run forward-looking costing standard. One cannot develop total forward-looking costs by “mixing-and-matching” the standards and assumptions that govern the initial outlay for equipment purchased at one point in time with the operating expenses associated with a *different* equipment purchase and the one-time, customer-specific expenses associated with *still* different investments. Such an approach would produce a total cost that bears no reasonable relation to any coherent costing/pricing standard, and would, in truth, be a step away from considering “real-world” costs in a very important sense.

(127) Moreover, as I describe below, attempting to base non-recurring costs on “real-world,” short-term data would not simplify the regulatory process. Indeed, it might well complicate it. Both recurring and non-recurring charges should be based upon the same long-run incremental cost approach that the Commission has recognized is necessary to send the right economic signals.

A. The Commission Should Be Especially Careful To Prevent Incumbents From Erecting Barriers To Entry Via Excessive, Non-Cost-Based Non-Recurring Charges.

(128) Non-recurring prices are significant because they represent an up-front cost of doing business new entrants will incur in conjunction with each customer that they win from the incumbents—which, by contrast, need not incur such charges in order to maintain their monopoly legacy customers. New entrants must overcome this additional hurdle to entry into the local exchange markets for which incumbents previously held an exclusive franchise.

CLECs that seek to enter the market using unbundled network elements in conjunction with their own facilities will be unable to avoid non-recurring charges. Non-recurring charges can add significantly to the total cost that a new entrant will incur to use the incumbent's unbundled network elements, making competitive entry using those elements uneconomic.

(129) Moreover, as the *NPRM* notes (§ 114), non-recurring charges can be a serious barrier to entry because they are, in effect, entrance fees. Typically, the new entrant must pay non-recurring charges for unbundled network elements to the incumbent before it can obtain the unbundled network elements it needs to offer service to an end user. These “entrance fees” increase the capital that a new entrant must invest up-front before it receives even a penny of revenue from its retail customer and therefore make entry more difficult. Non-recurring charges for unbundled network elements are a sunk cost and thus create a barrier to entry.

(130) The only way that a new entrant can be sure of recovering the full cost of the non-recurring charges it incurs on behalf of a retail customer is to impose an up-front non-recurring charge on the retail customer that equals or exceeds the non-recurring charge the new entrant had to pay the incumbent to order the unbundled network element or elements needed to serve that customer. This, however, is easier said than done. An ILEC incurs no non-recurring costs or non-recurring charges when one of its existing customers chooses to stay with that incumbent. To persuade consumers to switch local exchange carriers, new entrants may therefore have to forego or minimize up-front charges. New entrants will have to try to recover any non-recurring charges they must pay at least in part in the monthly recurring prices that they charge their retail customers. The higher the non-recurring charges, the less likely that a new entrant can recover those costs through a markup on recurring prices over the average “life” of a customer, particularly given the frequency of customer churn that one might reasonably expect in a newly

competitive market. This reality adds to the barrier to entry that non-recurring charges create.

(131) Because incumbent local exchange carriers began the competitive era with virtually a 100% market share for local service, the difference in the effect of non-recurring charges on the competitive positions of incumbents and new entrants is enormous. At least initially, almost all non-recurring charges associated with customers switching service providers fall on new entrants because all of their customers are “new.” Thus, all of the increased risk associated with the sunk costs that non-recurring charges represent falls on new entrants. All other things being equal, higher sunk costs translate directly into a higher cost of capital for new entrants relative to incumbents.

(132) This difference in capital costs makes competitive entry very difficult. Even if a new entrant is equally as efficient as the incumbent in every other respect, a higher cost of capital means that the minimum price that a new entrant must charge retail customers to recover all of its costs will exceed the minimum fully compensatory price that the incumbent can charge. Because new entrants generally must offer *lower* prices than the incumbent to win customers, it is clear that non-recurring charges create a difficult bind for new entrants.

(133) Incumbents have every incentive to make non-recurring charges an even larger barrier to entry than they would otherwise be by exaggerating the level of non-recurring cost associated with the preordering, ordering, and provisioning of unbundled network elements. If, however, incumbents are able to use non-recurring charges to create a substantial barrier to entry, consumers will be the ultimate losers. Fewer firms will be able to enter the local exchange market. Firms that do enter will need to charge higher prices than they might otherwise have been able to charge. All of this will limit or prevent consumers from getting the benefits that were supposed to come from opening up local exchange markets to competition by reducing the

downward pricing pressure that competition is expected to exert.

B. The Commission Should Adopt A Consistent, Long-Run Approach To Calculating Non-Recurring Costs. (*NPRM* ¶¶ 116-119)

(134) At ¶¶ 116-117, the Commission’s *NPRM* asks whether a shift to a “real-world” costing approach (its tentative conclusion at ¶ 52 relative to recurring UNE costs) would also be appropriate for non-recurring charges. Professor Robert E. Willig explains his accompanying declaration that this “real-world” approach is little more than a short-run incremental cost methodology that is constrained by the ILECs’ sunk investments.

(135) On the recurring cost side, a properly calculated short-run cost study should produce far lower costs than does the TELRIC methodology because one would exclude the costs of sunk investments. The same is not necessarily true for non-recurring costs, however. A short-run cost methodology risks serious overstatement of forward-looking non-recurring costs because it does not capture the non-recurring cost savings associated with new investment. As I will explain further in a following section, this is true even when that new investment is reflected (at least in part) in the short- or intermediate-run recurring cost study. One consequence, therefore, of the “real-world” approach is that it increases the magnitude of non-recurring costs. This, in turn, increases the barriers to entry that potential competitors encounter—a patently undesirable outcome.

(136) The Commission correctly rejected the ILECs’ proposals to base UNE rates on historical costs and reaffirmed its “commitment to forward-looking costing principles.”⁷⁷ Adherence to those principles requires the assumption of a state-of-the art network in the context of recurring costs. That is equally true in the context of NRCs. As the Commission noted,

⁷⁷ *NPRM* ¶¶ 29, 37.

“consistency among the various components of rates is important,” because “[u]sing one set of network assumptions for recurring charges and a different set of network assumptions for NRCs potentially results in some over-recovery or under-recovery.”⁷⁸ A concern about consistency is indeed centrally important in considering the effect of adopting a short-run standard for non-recurring costs. As I will show below, irrational non-recurring costs result from applying either a short-run approach or from using inconsistent assumptions between recurring and non-recurring analysis. Indeed, a shift to a short-run standard that considers only the “real-world” costs that an ILEC incurs in provisioning UNEs over its existing network will necessarily produce a result that is backward-looking instead of forward-looking and that gives a distorted picture of total element costs when combined with forward-looking recurring costs (be they short-run or long-run).

(137) Thus, as in the case of recurring costs, a true forward-looking methodology for non-recurring costs should not be constrained by the existing network configuration that the ILECs (or any other carrier) currently deploy.⁷⁹ Instead, a forward-looking economic cost analysis should capture the cost that the firm would incur to provide service to a given market in the future, without considering constraints imposed by the firm’s past decisions. The calculation of those costs can be correctly made *only* if one assumes the use of the available least-cost technologies.

1. A Short-Run Approach, Even If Applied To Both Recurring And Non-Recurring Costs, Could Produce Inconsistent And Inflated Non-Recurring Costs. (See NPRM ¶¶ 116-117)

(138) As the Commission’s Wireline Competition Bureau recently concluded, using

⁷⁸ *Id.* ¶ 117.

⁷⁹ I recognize, however, that the current TELRIC methodology imposes a constraint to use the ILECs’ existing wire-center locations.

different network assumptions to calculate recurring and non-recurring costs “almost certainly would result in over-recovery or under-recovery of costs.”⁸⁰ Recurring and non-recurring costs must necessarily be coordinated and consistent. If recurring and non-recurring costs are not calculated consistently, then the total price competitors pay will not match the ILECs’ total element cost as determined by any rational standard. In other words, it will be almost certain that total costs would be either over or under-recovered and the “TE” in TELRIC would be jettisoned along with the “LR.”

(139) Any methodology that limits itself to examining whatever recurring and non-recurring costs an ILEC reports over a specified short-run horizon (*e.g.*, the three- or five-year periods that the Commission contemplates in ¶ 54 of the *NPRM*) will *necessarily* create a mismatch between recurring and non-recurring costs. For example, if one limited a forward-looking study to a five-year horizon, the “real-world” non-recurring activity and costs observed over that span would be primarily the cost of non-recurring activity performed not on the forward-looking equipment placed during those five years, but instead the cost of working with older embedded equipment.

(140) The following scenario illustrates this point. Assume that there are two types of DLC systems—DLC-A and DLC-B—with DLC-B being the latest technology, which significantly reduces operating expenses by automating many of the maintenance and non-recurring tasks that were heretofore manual activities using DLC-A. DLC-B, however, also requires a somewhat higher Right-To-Use (“RTU”) fee payment than DLC-A to compensate for its sophisticated new software. Further assume that, at the start of the five-year window for its new forward-looking cost study, ILEC-1 has 100 units of DLC-A and no DLC-B in place in its

⁸⁰ *Virginia Arbitration Order* ¶¶ 568-569 (footnote omitted).

“real-world” network. ILEC-1, however, plans to place only the new cost-reducing DLC-B during the five-year window.

(141) In this scenario, a recurring cost study would assume that ILEC-1’s recurring investment will consist of 100 percent DLC-B, with the increased RTU payment as part of the investment. In the non-recurring study, however, the “real-world” costs observed in the first year of the study would be almost entirely the cost of the manual work performed on the existing DLC-A equipment. The mix of all manual DLC-A work to automated DLC-B work would improve each year. Even at the end of the five-year study window, however, the overall mix would still be heavily biased by the manual DLC-A based costs. Thus, competitors would pay recurring charges sufficient to recover the costs of the ubiquitous deployment of advanced cost-saving technology, but non-recurring charges that largely reflected the embedded technology in place initially.

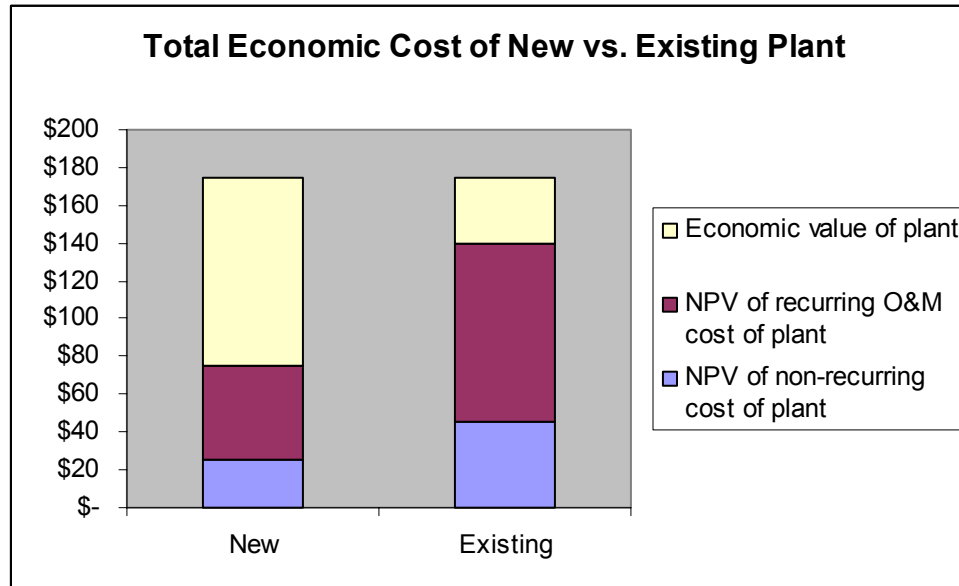
(142) Although nothing in the “real world” will ever be as easy to identify as the scenario in this illustration, imposing a short-run analysis window on forward-looking costs will inevitably produce a disconnection between recurring and non-recurring costs. Assuming that companies tend to invest in equipment that reduces labor costs (which is surely the case with loop plant electronics), this will produce a distorted total cost. In other words, near-future non-recurring costs will never correspond with near-future investments – and will likely overstate true forward-looking costs.

2. A Mix Of Long-Run Recurring Costs And Short-Run Non-Recurring Costs Overstates Forward-Looking UNE Costs.

(143) Using a long-run (or even relatively long-run) approach to recurring costs, but using an approach that allows ILECs to recover “real-world” or short-run non-recurring costs,

would also fail to produce reasonable results. Such a mixed approach would recover the total cost of building a new, fully modern network *and* selected additional costs, the combined total of which will always exceed the price that would prevail if unbundled network elements were provided in a competitive environment.

(144) A simple numerical example illustrates the problem with using different approaches to calculating recurring and non-recurring costs. Assume that the incumbent can purchase a piece of modern, efficient equipment for \$100. Further assume that the expected net present value (“NPV”) of all the recurring operating and maintenance (“O&M”) costs over the economic life of that equipment is \$50 and the expected NPV of all the costs for “non-recurring” activities over the life of that equipment is \$25. Then, the expected NPV of all the operating costs for this piece of equipment is \$75. Now assume that the incumbent has an existing piece of equipment that performs the same functions. The expected value of the recurring O&M costs of the existing equipment over the same period as the economic life of the new equipment is \$95 and the expected NPV for “non-recurring” activities over that same time horizon is \$45, for a total of \$140. Because the existing equipment costs \$65 more to operate than the new equipment to perform the same task, its economic value is \$65 less than that of the new equipment—or \$35. The chart below graphically depicts this valuation.

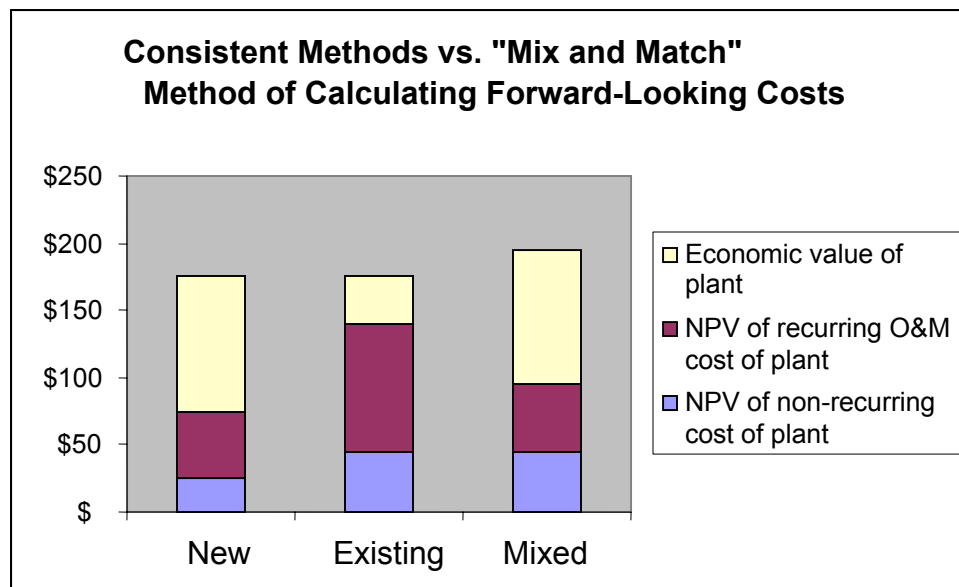


Thus, the total forward-looking cost of the existing plant is the same as that of new plant with the higher recurring and non-recurring charges of the existing equipment offset by the lower cost for the equipment itself.

(145) As the chart demonstrates, the forward-looking cost of the existing equipment can be calculated either (1) from the price, recurring and non-recurring charges of the new equipment or (2) from the recurring and non-recurring charges of the existing equipment, combined with an assessment of the value of the existing equipment that relies on the price and recurring and non-recurring charges of the new equipment. Conceptually at least, the first of these two approaches is straightforward. Incumbent LECs, however, almost always propose methods that deviate from the use of straightforward and consistent long-run non-recurring costs to compute non-recurring expenses (even as the incumbents have viewed that concept). Incumbents’ existing “TELRIC” studies typically attempt to mix elements of both methods, which results in a higher total cost than either method produces when applied consistently.

(146) As with the short-run recurring/short-run non-recurring approach discussed

above, using a long-run recurring/short-run non-recurring approach imposes recurring charges based on the economic costs of the new piece of equipment and non-recurring charges based on the costs of the existing piece of equipment.⁸¹ The following chart illustrates the total forward-looking economic costs that would result from application of the latter mixed cost methodology to my numerical example. In this chart, the “New” and “Existing” approach totals remain as above but a new “Mixed” picture is added depicting the total that results when one mixes-and-matches by stacking the non-recurring expenses from a short-run approach based on the non-recurring expenses associated with existing plant and the recurring plant investment and operating expense of new plant as is modeled in a long-run approach. As the chart shows, this mixed methodology systematically overstates total forward-looking economic costs.



⁸¹ Examples include calculating non-recurring costs based on copper- or universal digital loop carrier (“UDLC”) plant when recurring costs are based on GR-303 compliant DLC and developing non-recurring loop conditioning costs when recurring costs reflect a modern network that does not need such conditioning.

(147) As compared with a TELRIC methodology that consistently relies on reconstructed plant, the mix-and-match methodology would overstate non-recurring charges by \$20. Similarly, as compared with a method that relies on existing plant ILEC operating expenses (recurring and non-recurring) but established the value of plant based on its long-run economic cost, a mix and match methodology also overstates the value of the incumbent's plant by \$20—similarly leading to a \$20 inflation in overall costs.

(148) A “mix-and-match” approach to costing that permits double-recovery gives the incumbents improper signals concerning when to modernize their networks. A simple analogy explains this point. The decision to buy a new car typically involves a tradeoff between the higher monthly loan or lease payment associated with the new vehicle versus the higher maintenance cost associated with an older vehicle. At some point, the operating cost of the older car becomes so high that it is more economic to dispose of the old vehicle and buy a new one, even if the previously owned car is fully paid off and there are no monthly payments whatsoever. Now suppose, however, that the owner of the older vehicle is guaranteed recovery of the actual cost of all repairs needed to keep the car running. The individual would never have any incentive to incur the cost of buying a new car, and would continue operating the old vehicle long after it ceased to be economically rational (from a societal perspective) to do so. Similarly, if the incumbents are reimbursed for the recurring cost of building a brand-new, modern network (akin to the monthly payment on a new car) *and* for the non-recurring cost of maintaining and/or modifying their existing network to provide both voice and advanced services, they will have less incentive to invest in new, least-cost technology.

a. The Commission Should Reaffirm The Use Of Consistent Long-Run Assumptions For Both Recurring And Non-Recurring Costs To Avoid Misrepresenting Total Element Costs.

(149) The Commission's current TELRIC pricing rules properly make no distinction between recurring and non-recurring costs in discussing the appropriate technology and network configuration to assume in a forward-looking economic cost study. Under the Commission's existing rules, the total of recurring and non-recurring charges for a given network element may not exceed the TE forward-looking economic cost for that element.⁸² The Commission did not suggest in the *NPRM* that it was considering abandoning the TE approach, and it stated its continued commitment to a forward-looking costing methodology.⁸³ Retaining the TE approach would be much more difficult, if not impossible, to achieve if the cost study or studies on which they were based assumes a short-run basis for non-recurring costs.

(150) As the Commission described in defining its TELRIC methodology, UNE studies should reflect "the forward-looking cost over the long run of *the total quantity of the facilities and functions* that are directly attributable to, or reasonably identifiable as incremental to, such element, calculated taking as a given the incumbent LEC's provision of other elements."⁸⁴ To comply with this total cost minimization requirement, a cost study must compute both recurring and non-recurring costs based on the same long-run network configuration—which is what any rational company would consider when deciding whether or not to invest in the next new facility.

(151) Failure to compute recurring and non-recurring costs based on a consistent network design can lead to a systematic bias, upward or downward, in the estimation of total

⁸² 47 C.F.R. § 51.507(e).

⁸³ See *NPRM* ¶ 37.

⁸⁴ 47 C.F.R. § 51.505(b), emphasis added.

forward-looking costs. This bias occurs because alternative network designs reflect different tradeoffs between the kinds of costs usually classified as recurring (capital costs and costs for ongoing operations and maintenance) and those classified as non-recurring (one-time, customer-specific costs caused by a particular service order). By contrast, the use of a consistent network design minimizes the possibility of such bias while ensuring that the ILEC will recover the total forward-looking costs of nonrecurring activities that would be required in establishing a competitive market.⁸⁵

(152) Both the Commission and state commissions have recognized the importance of using a consistent network design to calculate recurring and nonrecurring costs for unbundled network elements. As previously indicated, in addition to the *NPRM*, the *Virginia Arbitration Order* issued by the Commission’s Wireline Competition Bureau found Verizon’s non-recurring cost model to be inappropriate because, *inter alia*, it used inconsistent network assumptions by excluding from the non-recurring cost model some of the equipment that it had included in its recurring cost model. The Bureau concluded that the use of such different network assumptions would “almost certainly” result in overrecovery or underrecovery of costs.⁸⁶

(153) Moreover, as the Bureau also noted in the *Virginia Arbitration Order*, a number of state commissions “have made clear the importance of using a consistent set of network assumptions” in calculating recurring and non-recurring costs.⁸⁷ For example, commissions in Massachusetts, Maryland, Texas, and California have all endorsed the fundamental principle of using a consistent network design to calculate recurring and nonrecurring costs for unbundled network elements.

⁸⁵ See *NPRM* ¶ 117.

⁸⁶ *Virginia Arbitration Order* ¶ 569.

⁸⁷ *Id.* ¶ 569 n.1473.

(154) The Massachusetts Department of Telecommunications and Energy (“DTE”) held in 1999 that in determining forward-looking costs, its objective was “to maintain consistency between the assumptions used in the TELRIC recurring cost study and the NRC study....”⁸⁸ Last year, in its decision prescribing revised UNE rates, the DTE reiterated that “recurring and NRC models for UNEs should be based on the same network assumptions.”⁸⁹

(155) The Maryland Public Service Commission also found that “when Verizon, or any other party, proposes its rates for the upcoming UNE proceeding, Case No. 8879, it should utilize one network design for all rates and support the assumptions that design represents.”⁹⁰

(156) Similarly, an Arbitration Award issued in a proceeding before the Texas Public Utility Commission found that “the network design inconsistencies in the recurring and non-recurring cost studies [of Southwestern Bell Telephone] do not result in correct xDSL costs and rates and consequently render the proposed charges invalid.”⁹¹ Consistent with this finding, the

⁸⁸ See Massachusetts DTE, *Consolidated Petitions of New England Telephone and Telegraph Company d/b/a Bell Atlantic Massachusetts, et al., pursuant to Section 252(b) of the Telecommunications Act of 1996, for Arbitration of Interconnection Agreements between Bell Atlantic-Massachusetts and the aforementioned companies*, DPU/DTE 96-73/74, 96-75, 96-80/81, 96-83, 96-94-Phase 4-L, October 14, 1999, at 19.

⁸⁹ Massachusetts DTE, *Investigation by the Department of Telecommunications and Energy on its own Motion into the Appropriate Pricing, based upon Total Element long-Run Incremental Costs, for Unbundled Network Elements and Combinations of Unbundled Network Elements, and the Appropriate Avoided-Cost Discount for ILEC New England, Inc. d/b/a ILEC Massachusetts’ Resale Services in the Commonwealth of Massachusetts*, D.T.E. 01-20, Order issued July 11, 2002, at 441.

⁹⁰ Maryland Public Service Commission, *In the Matter of Arbitration of Rhythms Links, Inc. and Covad Communications Company v. Bell Atlantic-Maryland, Inc. Pursuant to Section 252(b) of the Telecommunications Act of 1996*, Case No. 8842 (Phase II), Order No. 76852, issued April 3, 2001, at 15-16.

⁹¹ *Petition of Rhythms Links, Inc. for Arbitration to Establish an Interconnection Agreement With Southwestern Bell Telephone Company*, Texas PUC Docket Nos. 20226 and 20272, Arbitration Award issued November 30, 1999, at 96.

Arbitrators ordered Southwestern Bell Telephone to file new recurring and non-recurring cost studies for xDSL-capable loops and line “conditioning” that are “based on the same network.”⁹²

(157) This ruling is consistent with an earlier California decision on the non-recurring costs for unbundled network elements, in which the California Public Utilities Commission found that:

. . . it makes little sense to model one type of network for unbundled elements and then assume a different network exists for ordering and provisioning the same unbundled elements. We will evaluate Pacific’s [non-recurring cost] model and parties’ proposals using the forward looking network we have previously assumed.⁹³

(158) The California decision also provided a specific example of the type of double-recovery that could occur if the networks assumed for recurring and non-recurring costs were not the same.

In D.96-08-021 and D.98-02-106, we adopted Pacific’s loop and access line costs based on a mix of copper and fiber. In the recurring phase of this proceeding, Pacific assumed a 52%/48% copper/fiber ratio. We think it would be both unfair and unreasonable to allow Pacific recurring cost recovery based on this ratio and then allow a different network mix in developing its non-recurring costs. It would amount to allowing double recovery of NGDLC costs by overstating Pacific’s non-recurring cost studies.⁹⁴

(159) The California Commission’s concern regarding double-recovery of Next

⁹² *Id.* at 97.

⁹³ *Rulemaking on the Commission’s Own Motion to Govern Open Access to Bottleneck Services and Establish a Framework for Network Architecture Development of Dominant Carrier Networks*, California PUC Dockets R.93-04-003 and I.93-04-002, Decision 98-12-079 issued December 17, 1998, at 34.

⁹⁴ *Id.* at 70.

Generation Digital Loop Carrier (“NGDLC”) costs⁹⁵ exactly parallels the concern I illustrated above regarding what would happen if, for example, the Commission adopted a short-run approach for recurring and non-recurring costs.

b. A Short-Run Or “Mix-And-Match” Approach To Non-Recurring Costs Would Not Eliminate Data Problems And Controversies.

(160) Contrary to suggestions in the *NPRM*, short-run or mix-and-match approaches to recurring/non-recurring cost calculation would not simplify or streamline the regulatory process. In this regard, “real-world” experience shows that one cannot accept ILEC claims about what their “real-world” costs are—particularly when they are reporting what costs should be imposed on competitors.

(161) In ¶ 119 of the *NPRM*, the Commission asks a number of questions that apparently are intended to explore the possibility of developing guidelines that might help minimize controversy in determining assumptions and inputs for non-recurring cost studies. One question is whether mandating the use of ILEC “actual” costs, and assumptions that “more closely track the incumbent LEC’s existing network,” would reduce “speculation” in cost studies—particularly the need to choose between conflicting opinions of subject matter experts. The Commission also asks whether state commissions might develop “more objective evidence” to determine non-recurring costs.

(162) Even if it would be appropriate to use “actual” ILEC current costs in a forward-looking cost study, ILEC-reported costs in UNE cost studies should be presumed to have very little relation to “actual” costs. As other AT&T declarants make clear, the notion that a short-run

⁹⁵ NGDLC is a commonly used name for GR-303-compliant DLC.

or “real-world” cost methodology would somehow be easier to develop is incorrect. One immediate problem is that all “real-world” data about non-recurring activity performed by ILEC personnel comes from non-public aggregated summaries of time reports developed by the ILECs using a variety of undisclosed and/or subjective, systems and practices. It is likely that these summaries have not been audited.

(163) To develop their non-recurring cost studies, ILECs typically use some process (which would need to be reviewed) to select a sample of those reports or a sample of employees to provide task frequency and time estimates (which would need to be examined). Complicating matters, those employees either clearly recognize, or are directly informed of, how their reports will be used (which, in the case of selected time reports, may be to create the budget for their own departments and, in the case of time estimates, might be as blunt as being informed that the estimates will be used by the state commission to determine the cost that their company can impose on potential competitors).

(164) The actual time that an ILEC employee spends on a UNE-related non-recurring activity may be difficult to discern—even for the ILEC employee. ILEC employees may perform multiple jobs of different types at the same site (including, *e.g.*, placing line cards to support installing DSL service for an ILEC affiliate and a POTS card that might support a UNE loop) or as part of the same service order. ILEC employees must self-allocate time among those activities. ILEC “actual” time reports also may report very different task times for what appears to be an identical activity, but fail to note that entirely different generations of loop plant were involved.

(165) In other words, without intensive analysis to evaluate supposed ILEC “actual” costs and to link claimed costs to data to other sources that relate those reported costs to the cost-

causing investments, “actual” ILEC costs can be very misleading. Without such intensive analysis, it is impossible to determine if, for example, all of the high task times an ILEC reports as “actual” costs are evenly distributed across facility types or are consistently associated with one type of (potentially obsolete) equipment.

(166) ILECs have, in fact, already filed many non-recurring cost studies based on what they claim are short-run or “real-world” methodologies (*i.e.*, based on time studies, task oriented costing or other methods designed to capture the tasks and task times associated with current “actual” non-recurring tasks). In some cases, the ILECs added a forward-looking veneer to these “real-world” studies by applying (minimal) forward-looking adjustments based on expert opinion; other times, they did not. However, state commissions have repeatedly found that such supposed “real-world” ILEC analyses are skewed and controversial. Indeed, ILEC “actual” non-recurring costs have already been rejected or subject to substantial adjustments by state commissions and by the Commission’s own Wireline Competition Bureau. They have thus been proven to provide no benefit in terms of simplifying the regulatory process.

(167) For example, Verizon’s non-recurring cost studies—presented in the Virginia arbitration and other state cost proceedings—were based on a survey that purported to measure the non-recurring costs associated with its “real world” network. Verizon then made adjustments to the survey results, based on subject-matter expert opinion, to reflect the non-recurring costs associated with its alleged forward-looking network. The Commission’s Wireline Competition Bureau found both that Verizon’s “forward-looking” adjustments were neither transparent nor verifiable *and* that its base report of “actual” non-recurring costs (*i.e.*, its employee survey purporting to measure the non-recurring costs associated with Verizon’s “real-world” network) was a source of equal, if not greater, confusion and error.

(168) As noted in the *Virginia Arbitration Order*, the Wireline Competition Bureau found numerous deficiencies in Verizon’s reported survey of “actual” non-recurring costs. Specifically, it found that Verizon provided instructions to employees to estimate task times that biased results, that results were averaged in a manner that systematically inflated task times, that the supposed “real-world” data contained “extreme variations,” and that the methodology used to capture “real-world” time was further biased by breaking down tasks into small steps and then requiring that a minimum time be reported for each task.⁹⁶

(169) Pacific Bell (now SBC California) also produced a non-recurring cost study based on surveys of its employees performing work in its existing “real-world” network. The California Public Utilities Commission found those studies biased and in need of “significant adjustments” for problems that range from placing “extra emphasis to a significant pool of slower task times” to including raw data that contained “extreme ‘outliers’ which are distorting upwards the average task times.”⁹⁷

(170) Although it might seem that such problems could be avoided by performing time-and-motion studies of the activities performed in a “real-world” setting, this approach has not proven easy to administer or noncontroversial. The Maryland Commission had directed Verizon to perform such studies, but the company claimed that time-and-motion studies were infeasible. Instead, Verizon presented the Maryland Commission with results based on the same employee survey submitted in the Virginia arbitration.

(171) In several BellSouth states, the company presented non-recurring costs purportedly based on time-and-motion studies. Here again, transparency and verifiability of the

⁹⁶ *Virginia Arbitration Order*, ¶¶ 572-575.

⁹⁷ California Public Utilities Commission, Decision 98-12-079, *supra*, at pp. 75-76.

studies proved to be an illusory goal. Moreover, where it was possible to trace results, one might discover, for example, that BellSouth's study result was based on a sample of only one order. Thus, "real-world" non-recurring costs have proven remarkably *unreal* in practice, and required intensive regulatory scrutiny to avoid overstating non-recurring costs.

(172) Although asking the ILECs to self-report their "real-world" is not a reliable or balanced approach, it is possible (although, again not easy) to develop "objective evidence" of the type that the Commission appears to desire for use in UNE rate proceedings.⁹⁸ I am aware of a few cases in which in which state commissions have conducted on-site inspections of the ILEC's facilities (as in a tour of a collocation installation) or have reviewed demonstrations of work activity (as in a videotape of work being performed or a live demonstration using "real-world" equipment brought into a hearing room). Such techniques allow a state commission to verify that the task times included in a study represent for work being done on the relevant type of equipment, by qualified personnel and in a reasonable manner.

(173) Based on my own review and knowledge of these activities by state commissions, they have tended to provide further confirmation that ILEC "real-world" task time estimates are not reliable and therefore not suitable for determination of non-recurring costs. One particularly memorable example was a proceeding in Florida in which BellSouth presented a video of the work needed to perform non-recurring "conditioning" tasks. After reviewing the video in detail in that proceeding, Mr. William Greer, BellSouth's own witness on "conditioning" task times, admitted that the tasks and task times presented to the Commission by CLEC witness Mr. Joseph P. Riolo (who is filing a declaration in this matter on behalf of AT&T)—rather than BellSouth's own—closely matched the video evidence. Mr. Grier stated that "[Mr. Riolo's] total time is

⁹⁸ See *NPRM* ¶ 119.

close to what BellSouth has [in an actual videotaped deloading job]. So, yes, he has done a very good job here of enumerating the steps and giving some times.”⁹⁹

(174) I have also witnessed the task of load coil removal demonstrated before state commissioners and/or commission staff personnel using portable, but “real,” demonstration equipment. Handling a splice case for the very first time in my life using that demonstration equipment, I personally was able to remove load coils in a fraction of the time I have seen reported in ILEC “real-world” studies. I understand that in similar demonstrations (such as demonstrations involving splicing times), the times claimed by ILECs to perform those tasks have also been shown to be grossly overstated.

(175) Such demonstrations might also help commissions resolve any concern regarding which manual tasks need to be included in non-recurring cost studies and which tasks can be or are readily automated.¹⁰⁰ This is particularly true of the workgroups that frequently appear in ILEC non-recurring cost studies to “coordinate” the activities of other groups. The Commission should establish a presumption that the costs for such extra entities (meaning personnel included in a non-recurring cost study who are not directly involved in completing a task) will be excluded unless the ILEC can demonstrate that the employees in question perform some tangible activity that increases the overall efficiency of the non-recurring work process.

(176) Another type of dispute in which “objective evidence” might be developed involves situations in which the ILEC refuses to implement a particular automated system or to

⁹⁹ Hearing Transcript in Florida Public Service Commission Docket 990649-TP, Volume 12, September 20, 2000, at 1751, lines 9-13.

¹⁰⁰ Live demonstrations also have the benefit of screening out excessive non-productive time, unnecessary tasks, unrelated tasks, inflated time reports created because an employee understands that that is what is desired, and other improper matters that the ILEC included in its self-reported “real-world” data.

allow CLECs access to an automated process. The most hotly debated example of this scenario is ILECs' position that, although highly automated IDLC is the most efficient technology for the ILECs' own use in providing retail services, they will not use IDLC technology to provide UNE loops. Instead, they contend that the cost of UNE loops should include more costly UDLC, which also causes additional manual non-recurring work.

(177) In such disputes over the use of IDLC/UDLC technology, I suggest that the Commission require the ILEC to provide sufficient *technical* documentation to establish why it is not possible to employ the technology to provision UNEs. The need for the ILEC to produce such technical documentation is important, as I have seen ILECs produce official-looking claims by equipment vendors that turn out to have been written by the vendor's marketing personnel (*i.e.*, the group responsible for selling things to the ILEC). State commissions should rightly view any such showings with deep skepticism, as it is abundantly clear that the ILECs can exert tremendous pressure on vendors. Instead, if the ILEC refuses to produce sufficient technical documentation, the state commissions should presume that IDLC can also be used to provide UNEs. Indeed, the state commission should extend such an approach to *any* technology that the ILEC is currently using for its own benefit.

(178) Although the "objective evidence" that I describe would provide some assistance in determining non-recurring costs, neither that evidence nor the ILECs' purported "real-world" data would eliminate "speculation" or the need to choose between conflicting opinions of subject matter experts. Even under a "more real-world" approach, subject matter experts would continue to disagree over such issues as whether the ILECs' practices and claimed work times were reasonable and accurate; the issue would simply shift from whether they were forward-looking to whether they are currently reasonable. Subject matter experts would still continue to disagree

over the issue of which party's estimates were more reliable, what portion of the ILEC's costs were associated with non-recurring costs, and which costs were attributable to UNEs. In other words, although the particular issues might change under a "more real-world" approach, the need to resolve disputes between experts would not.

3. The Commission Should Not Assume That The ILECs' Current Practices Are Efficient.

(179) The Commission also asked whether it is "appropriate to establish a presumption that an incumbent LEC's current practices with respect to non-recurring activities are efficient."¹⁰¹ Clearly, the Commission should not adopt such a presumption. To the contrary, the incumbent has both the incentive and the ability to remain inefficient, to overstate all of the costs it will incur on behalf of its competitors, and to inflate the actual costs of many UNEs.

(180) The "real-world" experience that I have described above demonstrates that the Commission should not presume that any ILEC-reported non-recurring costs is an efficient cost or is even related to "real-world" practice in any meaningful way. Establishing a presumption that ILECs' "actual" data reflect efficient practices would merely provide the ILECs with an even greater incentive to exaggerate their reported results.

(181) The ILECs' current inefficient practices, as reflected in their "actual" costs, do not reasonably correspond to efficient, forward-looking practices and therefore would misrepresent total forward-looking costs. As described below, for example, the ILECs engage in substantial manual order processing and "loop conditioning" activities that would not be performed in a truly efficient, forward-looking network.

¹⁰¹ *NPRM* ¶ 119.

(182) Only with the threat of competition in the local exchange market have the ILECs even begun to eliminate the substantial inefficiencies of their embedded networks. The expectation that competition eventually will cause the ILECs to become significantly more efficient is one of the primary motivations for the extraordinary changes mandated by the Act. As the multiple mergers, downsizings and ongoing efforts of the ILECs to reduce costs suggest, the process of learning to become as efficient as is necessary to compete is a work-in-progress. By assuming that current ILEC costs are “efficient” and imposing those current costs on competitors, the Commission would help enable the ILECs to avoid a basic goal of the Act by providing a cushion of inefficiency that they can maintain.

(183) To be consistent with forward-looking economic cost principles, the non-recurring charges to provision UNEs should reflect forward-looking, efficiently incurred costs in accordance with the requirements previously set forth by this Commission pursuant to the Act. The non-recurring charges should reflect to the greatest extent possible a mechanized, non-manual process, which minimizes costly human intervention. In addition, the non-recurring charges should recover only truly non-recurring costs and not the costs of constructing and maintaining the network, which are properly recovered in recurring charges.

(184) Thus, rather than establish a presumption that the ILECs’ current networks are efficient, the Commission should require ILECs to show their non-recurring UNE prices are based on the costs that an efficient firm operating in a competitive environment, using the most efficient technology available today, would incur. Prices based on this standard will not force competitors to compensate the incumbent for costs stemming from any past or embedded inefficiency. Prices based on efficient, forward-looking costs will encourage the incumbent to become more efficient in the provisioning of UNEs and will encourage the development of

competition in the local exchange market. Moreover, it is only such costs that will make it possible for UNE-based competition to deliver the full benefits of competitive market efficiency as is a substantial portion of the objective of the Act.

(185) To assume that the ILECs' current practices are efficient, or to assume that non-recurring costs should be based on the ILECs' current inefficient non-recurring practices, would be inconsistent not only with proper pricing principles, but with the basic goals and purposes of Congress in adopting the 1996 Act. If the price-cap regulation that was in effect at the time of the enactment of the 1996 had motivated the ILECs to be efficient, there would have been no need for Congress to require that the ILECs open their local exchange to CLECs. As Professor Willig and Dr. Selwyn demonstrate, however, price caps have not provided ILECs with sufficient incentive to be efficient and, indeed, can give ILECs greater incentive to be *inefficient*. For example, price-cap regulation implemented in conjunction with earnings ceilings for regulated operations may actually provide an incentive for ILECs to report more time to regulated activities (such as when a technician is in the field working on a regulated loop and nonregulated advanced services) to avoid sharing obligations or other earnings limits associated with regulated earnings. Moreover, any benefit that did arise from the onset of price-cap regulation is wholly irrelevant when the ILEC is reporting non-recurring costs for activity performed on plant purchased long ago under rate-of-return regulation or some other regulatory regime.

(186) Nor is there any reason to believe that the efficiency incentives of price caps guarantee least-cost decision making in the case of facilities that will wholly or largely be used by the incumbent's competitors. For example, there is no reason to believe that the efficiency pressures of price caps have had any effect on the cost inputs for the gateway systems and

software modifications for which incumbents seek recovery through an “access to OSS” charge. Typically, the incumbents have proposed prices for this element that would force their competitors to bear all of the “actual” costs that they have allegedly incurred to enable competitors to access the capabilities inherent in their OSS. The potential entry-inhibiting effects of excessive prices for access to OSS provide incumbents with ample incentive to inflate UNE costs.

(187) Similar incentives to be inefficient apply when an incumbent bases non-recurring charges on the costs that it allegedly incurs to perform those activities on behalf of competitors, without regard to the costs it incurs to perform similar tasks on behalf of its retail customers. For example, Verizon’s non-recurring cost studies inserted manual intervention into the UNE service ordering process that does not exist for its retail customers. It also proposed to base the cost of unbundled loops in large part on costly UDLC facilities, even where the company would use more efficient GR-303 technology in an IDLC mode in providing loops to its retail customers.¹⁰² And it sought to impose the costs of an unnecessary Wideband Testing System on competitors that had not requested such testing capability from Verizon.¹⁰³

(188) In short, any presumption that the ILECs’ current non-recurring activities are efficient would ignore the same “real world” that the ILECs ask this Commission to use as the basis for pricing. The ILECs have every reason to be inefficient. As the Commission indicates, the “incumbent LEC’s incentives to be efficient [are] diminished when competitive LECs are the

¹⁰² Pennsylvania PUC Docket No. R-00016683, *Generic Investigation of Verizon Pennsylvania, Inc.’s Unbundled Network Element Rates*, Verizon Recurring Costs Panel Direct, December 7, 2001, at 51-52. Verizon took similar positions in other state arbitration proceedings, including the Virginia arbitration before the Wireline Competition Bureau.

¹⁰³ *Id.* at 57.

primary users of a particular activity.”¹⁰⁴ But, contrary to the repeated contentions of the ILECs that their incentives are diminished because of the purportedly “low” prices produced by the current TELRIC methodology, the ILECs’ incentive to be efficient are diminished because the CLECs are their competitors—and, by remaining inefficient, they can impede the CLECs from competing with them.

(189) There is no downside for incumbents from serving competitors in a less efficient manner than they serve retail customers, especially where there is no retail analog. The incumbent can continue to employ efficient practices in its retail operations, and reap the direct and indirect financial rewards of doing so. Meanwhile, so long as regulators accept the incumbents’ cost estimates (under whatever cost methodology the regulators apply), the incumbents have every incentive to inflate their costs of performing non-recurring practices for the CLECs—and using practices that are inefficient will almost certainly inflate an ILEC’s costs. An ILEC therefore will not lose money on high-cost operations allegedly undertaken on behalf of competitors and likely will receive direct financial benefits from the decreased competition that results.

(190) These anti-competitive incentives for inefficiency have existed since almost the beginning of most price-cap plans. The incumbents have been aware since at least February 1996—and likely before, during much of the period that the Act was being debated in the Congress—that they would have an opportunity to charge competitors the “cost” of providing UNEs and interconnection services, regardless of the nature of the price-cap regime in place at the state or federal level. Economists have long known that a regulatory regime that combines some form of cost-based pricing for the products and services sold to captive customers with less

¹⁰⁴ See *NPRM* ¶ 119.

stringent controls on prices and profits for services open to competition creates strong incentives for the incumbent to shift costs onto the monopoly products and services for which regulators set cost-based prices and to overstate the true cost of providing those products and services. These cost-shifting incentives are all the more powerful when the captive customers in question are also the incumbent's competitors in some or all of the markets in which the incumbent has more pricing flexibility.

(191) Only if the regulators assume a forward-looking, "state-of-the art" network for purposes of determining costs and prices will the ILECs have sufficient incentive to eliminate their inefficient practices. For example, the ILEC would be given an incentive to improve the efficiency of its OSS if the regulators presumed that manual coordination costs should not be included in a forward-looking estimate of non-recurring costs. Coordination of provisioning activities is one of the basic capabilities supplied by modern OSS. Other than for the manual work that is actually required to make and test physical connections in its network, incumbents' OSS coordinate its entire order provisioning process so that no manual intervention is required for most mass-market retail services. Therefore, a forward-looking non-recurring cost study should recognize that the coordination required to provision basic services is automated. The Commission must not allow incumbents to short-circuit the efficiency of their OSS so that new entrant orders require manual coordination while its own retail service orders do not.

C. Because UNE Prices Should Be Based On Forward-Looking Costs That Assume The Least-Cost, Most Efficient Technology, Non-Recurring Charges Should Reflect The Costs Associated With Efficient, Forward-Looking Operations Support Systems. (See NPRM ¶ 118)

(192) To enable UNE-based competition to deliver the benefits of competitive market prices (as envisioned and expected by the Act) the Commission should maintain the requirement that UNE costs assume that the ILEC OSS are as efficient as one would expect of any modern

company operating in a competitive market.¹⁰⁵ This is both the principled economic approach and the most straightforward option for states to implement.

(193) Attempting to move to an approach based on the current conditions and inefficiencies of each ILECs' OSS would both provide a perverse incentive to those ILECs that have developed inefficient OSS for competitors to maintain those poor systems (or at least claim to) and create an administrative and analytical nightmare for states expected to monitor and develop costs based on the condition of each ILEC's OSS. Even more than for other aspects of the network, these costs tend to be difficult to assess, as the ILECs do not tend to account for OSS costs in a manner that permits precise definition of wholesale and retail costs. Moreover, these costs decline rapidly and would thus require intensive, ongoing review by regulators. For example, SBC recently announced to investors that its "PC, related hardware and RTU" costs have dropped \$93 million in the last few years. Moreover, SBC is implementing a major new initiative to reduce its costs by creating mechanized records depicting its loop plant (which had heretofore been on paper). SBC claims this leap into the mechanized world will "**Reduce** job times," "**Reduce** service intervals" and "Improve **accuracy**"¹⁰⁶ Thus it appears that SBC is in fact working to implement substantially more efficient OSS "as we speak." Changing the Commission's cost standard for UNEs to saddle competitors with costs based on the systems

¹⁰⁵ The *NPRM* seeks comment on "what assumptions should be made with respect to the capability of the incumbent LEC's OSS" in light of the *NPRM's* "tentative conclusion to more closely account for the real-world attributes of the routing and topography of the incumbent LEC's existing network in developing forward-looking costs." See *Notice* ¶ 118. As Professor Willig states in his separate Declaration, incorporating "real-world" geographic features into cost models is a separate issue from the choice of the type of OSS to be used for determining forward-looking costs. Consequently, a "more real-world" approach to routing and topography does not require the assumption of the ILEC's existing OSS, nor the valuation of the OSS at their historic cost levels, or at their short-run costs.

¹⁰⁶ SBC Presentation to Analysts, 11/13/03, "Service and Operations Initiatives" slide show presented by John Atterbury, Group President-Operations (emphasis in original).

SBC and other ILECs are rapidly moving to replace would thus be totally improper. A forward-looking approach should assume that the ILEC already has in place efficient pre-ordering, ordering and provisioning systems that operate at a very high percentage of the time without manual intervention.

(194) The assumptions that a cost study makes about OSS affect each of the major components of non-recurring costs, which typically are (or should be) related to customer- or order-specific aspects of the pre-ordering, ordering, and provisioning processes that occur in response to a request for service by an end user.¹⁰⁷ For example, a non-recurring cost study can assume: (1) either that competitors have to call the ILEC to have an ILEC employee look up available telephone numbers in the pre-ordering process, or that the available OSS allow the competitor to perform that function; (2) either that the orders a competitor sends to the ILEC frequently fail (requiring manual intervention by the ILEC) once the ILEC has accepted them, or that the ILEC OSS employs edits that reject orders and return the order electronically to the competitor so that the competitor may fix its own errors; and (3) either that an ILEC employee must manually schedule work by one of the ILEC's technicians to move each jumper required to connect points in the network, or that the ILEC has deployed widely available modern provisioning OSS that automate the generation of work schedules and are linked with the intelligent components of the ILEC network to automatically and electronically activate services and make cross connections where that capability exists. Each of these "either/or" presumptions about the ILECs OSS can have a major effect on final non-recurring costs.

¹⁰⁷ Other costs such as billing, maintenance and repair are widely acknowledged as not non-recurring because the costs for these functions are, in their entirety, regularly recurring functions that are, therefore, included in recurring costs for unbundled network elements and recovered in recurring charges for those elements.

(195) To reflect the conditions that prevail in competitive markets, the Commission should mandate the “or” option in each case (and in each similar case). In other words, non-recurring costs should reflect forward-looking long-run economic costs that presume ILECs will act as if they are in a competitive market. This means that non-recurring costs should be based on the cost that the incumbent would incur to provide pre-ordering, ordering and provisioning functions if it: (1) used forward-looking OSS operated efficiently, (2) employed efficient work practices, (3) deployed a network architecture that is forward-looking (*i.e.*, that matches the network architecture assumed to developed recurring costs), and (4) incurred reasonable labor costs.

1. Non-Recurring Costs Of The Order Processing Component Of Pre-Ordering And Ordering Should Be Near Zero, Because The Flow-Through Capabilities Of A Forward-Looking OSS Eliminate The Manual (Labor) Component.

(196) A forward-looking cost study should reflect the greatest feasible electronic exchange of information between companies. It should not assume too high a level of manual intervention in the service ordering process, and should not include manual steps where automated processes are readily available, more efficient, and less costly. In fact, because the degree of manual intervention in an efficient, forward-looking OSS would be minimal, the non-recurring costs for these functions would be extremely low.

(197) A TELRIC study must recognize that CLECs will interact with the incumbent electronically when placing UNE orders. In an efficient network, orders for UNEs flow through the OSS (preordering, ordering, provisioning, repair, maintenance and billing) with little or no manual intervention. Essentially, once the customer and the desired services have been accurately identified and transmitted into the system, the integrated software and databases of the OSS perform the remaining functions necessary to align and activate the necessary elements.

Forward-looking (and current) OSS are sufficiently sophisticated to allow the incumbent to screen orders from competitors for accuracy, to process a high percentage of valid orders and even to provision the necessary facilities on an automated basis, without manual intervention in many cases. Forward-looking standards exist that are expected to deliver even more sophisticated and efficient OSS.

(198) Essentially, incumbents today have a choice between (1) having efficient pre-ordering, ordering, and provisioning systems that operate a very high percentage of the time without manual intervention once the service order information has been entered into the system correctly, or (2) accepting a less efficient process and allowing a higher percentage of orders that “fallout” of the mechanized process and must be handled manually. The second option would be more costly, because it requires many more personnel to provision services. Hence, a forward-looking economic cost analysis should reflect the costs associated with option one.

(199) Pre-ordering functions are readily mechanized simply by allowing competitors access to the same pre-ordering OSS that the ILECs’ employees have used for years. Thus, in my experience, even the ILECs no longer tend to claim that competitors should pay a non-recurring cost for pre-ordering functions. Provided that the data that the CLEC has entered into the OSS are accurate (which OSS can also detect), the “flow-through” capabilities of a forward-looking OSS’s ordering and provisioning systems also eliminate the labor component associated with order processing (*i.e.*, costs associated with manually taking in and processing the data on a given order as opposed to costs associated with doing any specific requested work activity). Because (as described below) the percentage of fallout attributable to CLEC errors would be minimal, any significant level of fallout that might remain and require manual correction is attributable to an overall network management decision or omission.

2. At Most, Non-Recurring Costs Should Reflect The Labor Required To Manually Correct A Minimum Level Of Fallout That Is Caused By A Competitor's Input Error That The ILEC Could Not Reasonably Screen Out.

(200) The fallout that the incumbent handles manually should be minimal. As I noted above, it is economically efficient for the incumbent to manage its OSS so that orders can flow-through. Furthermore, the incumbent can and should return the vast majority of input errors to the competitor originating the order via automated front-end edits. Thus, competitors should (and will) directly bear most of any cost to process orders and correct fallout instead of the ILEC. This arrangement has the added benefit of providing the ILEC with a significant incentive to, in fact, implement sufficient edits in its OSS interface so that all reasonably detectable errors in a CLEC's order are identified up front so that the competitor can address them immediately and timely service delivery is not put at risk. Hence, the forward-looking cost that the incumbent incurs for this function on the wholesale side of its operations should be significantly smaller than its retail operations costs.

(201) Although the ILEC should be entitled to recover from CLECs the costs of manual processing that is due to some error or request by the CLEC that causes the order to fall out for manual processing, such instances would be rare in a forward-looking environment. After a detailed examination of the potential types of and causes of order fallout, AT&T subject matter experts have estimated that an efficient level of fallout attributable to competitors (and not to the ILECs' design decisions or to flaws in the ILEC's OSS) would be only approximately 2%.¹⁰⁸

(202) The recent *Virginia Arbitration Order* adopted this two percent fallout rate, noting

¹⁰⁸ See Direct Testimony of Richard J. Walsh on Behalf of AT&T and WorldCom, Inc., filed July 31, 2001, in CC Docket Nos. 00-251, 00-218 and 00-249, at 14-20 (Attachment 1 hereto).

that “several state commissions have adopted this position.”¹⁰⁹ The *Order* found that “it is reasonable to assume . . . that competitive LEC orders that have errors are returned electronically to the competitive LEC and resubmitted and that manual intervention by [the ILEC] at the ordering stage should be unnecessary.”¹¹⁰

3. Under Forward-Looking Principles, The ILEC Should Not Be Allowed To Recover Through Non-Recurring Charges Either The Costs Of Cleaning Up Their Databases To Correct Errors In Those Databases That Cause Fallout, Or The Costs Of Manual Fallout Caused By The ILEC’s Own Design Decisions.

(203) If the incumbent’s OSS performance does not correspond to a forward-looking OSS because its existing databases are contaminated with incorrect data, new entrants should not pay non-recurring charges to compensate the incumbents for cleaning up those databases. Cleaning up databases so that a high percentage of orders flow through is an activity that incumbents must undertake to maintain or improve their own competitive position. Moreover, this activity could bring very significant cost savings to the incumbent. The need to clean up legacy databases is an example of past inefficiency. The Commission should not allow the incumbents to impose the cost of such inefficiency on new entrants; indeed, to do so would be anti-competitive.

(204) Cleaning up its databases will help the incumbent to attract and retain end users. In a competitive environment, incumbents will face strong market pressures to maintain well-managed and accurate OSS because fallout increases the cost of providing service and also reduces the quality of service provided to customers. A company operating in a competitive environment has market incentives to improve customer service and reduce costs. Maintaining

¹⁰⁹ *Virginia Arbitration Order* ¶ 592 & n.1524.

¹¹⁰ *Id.*

efficient OSS allows the incumbent to achieve these objectives.

(205) For example, in the express shipping business, efficient OSS are (or were, until they became a standard business requirement) the competitive edge that allows customers to access FedEx's tracking system to determine the status and location of a package. This competitive benefit of efficient OSS pertains to retail operations, whether or not the company also has wholesale operations. In other words, where retail customers have a choice of service providers, competitors such as the incumbents have a strong incentive to maintain OSS and databases efficiently because customers are very sensitive to service delays. Making new entrants pay to help the ILECs correct errors in their databases to meet a competitive market standard would be tantamount to forcing competitors to subsidize the improvement of the incumbent's ability to compete with them. In any event, such a requirement would be compensating the ILECs for the embedded inefficiencies in their networks.

(206) Finally, CLECs should not be required to compensate the ILEC for all manual processing that occurs as a result of the ILEC's own decision not to design its OSS to allow the order to flow through the OSS without manual intervention. Although ILECs now provide full flow-through capability for many types of orders, they nonetheless have designed their OSS to cause certain other order types to fall out for manual intervention. Proper pricing methodology presumes that the forward-looking OSS will have flow-through capability whenever that is more efficient than processing orders manually. CLECs should not automatically be required to pay the costs resulting from an ILEC's decision not to provide flow-through capability where it would have been more efficient to do so. For example, when first implementing the UNE-P, SBC designed its processes to include both a disconnect order and a new connect order, which then required extensive manual coordination to ensure a seamless transition. SBC could have

designed UNE-P migration as a simple change order instead, eliminating any need for manual intervention. The presumption should be that orders which can be processed most efficiently with a system designed to deliver flow-through capability will be processed automatically.

4. The Cost Driver Should Be The Labor Cost Associated With Manually Performing Any Non-Recurring Task That Is Requested On The CLEC's Order.

(207) By maintaining existing TELRIC guidelines, the Commission can greatly simplify the task of developing UNE non-recurring costs. When one applies these standards, developing an estimate of non-recurring costs properly boils down to estimating a minimal cost for correcting undetectable service order errors (and errors not caused by the ILEC's design of its OSS) and to determining reasonable work times for the handful of provisioning activities that modern OSS cannot process on a mechanized basis such as the time to review an order and manually move a cross-connection for a loop with copper feeder with an ILEC central office.

(208) Thus, a typical non-recurring cost study should consist of determining the tasks that, assuming efficient OSS, must be performed manually, the amount of time it takes to perform the task, the frequency with which the task must be performed, and the cost per hour of the personnel who perform the task. However, if one assumes (as one should, under proper forward-looking cost principles) that the OSS are operating optimally (on as automated a basis as is cost-effective), the occurrence of such manual activities (and the incurrence of costs for such activities) should be infrequent.

D. The Commission Should Require That The Costs For Access To OSS Be Recovered Through A Competitively Neutral Mechanism That Does Not Unfairly Disadvantage New Entrants. (§ 118 Of The *NPRM*)

1. To the Extent They Are Properly Recoverable, Costs Associated With OSS Should Be Recovered Through Factors That Properly Allocate Shared Costs To Both Wholesale And Retail Customers.

(209) The *NPRM* (§ 118) asks whether the costs associated with OSS should be recovered through expense factors, or whether separate charges should be permitted. OSS costs support all of the functionalities of the ILECs' networks. Therefore, like general purpose computer costs (of which OSS costs are often a subset, in the ILECs' bookkeeping), OSS costs should be recovered through factors that load these expenses and support investment onto all of the activities that the OSS support. This is true both for systems that benefit both wholesale and retail as well as for those systems that the incumbents claim were developed exclusively for competitors, as I explain below.

(210) In general, there has been little dispute that it is appropriate to recover OSS costs through expense factors (expense loadings). Expense factors spread the costs of OSS over all users, including the ILEC's retail customers. By contrast, a separate OSS charge (at least in prior regulatory proceedings) has been spread only over projected CLEC demand – thereby producing a much higher cost to CLECs than if an expense factor is used.

(211) The incumbents, however, have often sought special recovery of the costs they incurred to open their OSS to competitors as directed by the Commission. Those claims have been vigorously disputed, and correctly so. The costs that incumbents seek to impose on competitors are one-time development costs of the gateways and system enhancements that the ILECs claim benefit wholesale customers exclusively, as well as, sometimes, ongoing maintenance costs of those systems. Because the one-time development costs to allow access to

an incumbent's OSS are caused by the transition to a competitive environment, these costs should be recovered in a competitively neutral fashion and therefore are not appropriately recovered through expense factors—indeed, they are not appropriately recovered from CLECs at all. I discuss this issue at length below. The cost of *operating and maintaining* those wholesale systems falls under a normal part of an ILEC's business and therefore should be treated like other OSS costs (*i.e.*, recovered through expense factors).

(212) Apart from that issue, there are a number of reasons why the ongoing costs of OSS should be recovered through expense and support investment factors, rather than through separate charges for an access to OSS UNE. First, recovery of OSS costs through expense and support investment factors is the most practical approach, given the incumbents' accounting of such costs. Incumbents rarely track OSS costs to particular systems or activities, at least at the level of accounting detail made available for parties to develop UNE costs. Ongoing software maintenance costs, in particular, are a normal course of business expense and are unlikely to be tracked in sufficient detail to make identification of specific costs practical.¹¹¹

(213) Similarly, determining whether a particular upgrade to the OSS supports only retail functions, only wholesale functions, or both would be extremely difficult, because it is unlikely that the incumbents track OSS expenditures in sufficient detail to make it easy to determine which costs were incurred for what services. Furthermore, wholesale systems benefit all customers, retail and wholesale, because they make competition possible. Given these facts,

¹¹¹ For example, in response to recent discovery in a California PUC proceeding, Verizon acknowledged that it could not provide any information indicating which of its OSS costs are for retail-only functions and/or for both retail and wholesale functions without performing a "special study." Verizon California responses to Joint Commenters' Data Request Nos. 66 and 282 (served June 21 and December 10, 2003, respectively, in California PUC Docket Nos. R.93-04-003/I.93-04-002 (Verizon Permanent UNE Phase).

the total cost of OSS upgrades that affect both retail and wholesale functions should be allocated across all end-users. This is, effectively, what recovery of such costs through an annual cost factor would accomplish.

(214) Second, a separate charge for OSS would still be subject to the Commission's pricing rules and forward-looking economic principles. The Bureau found in the *Virginia Arbitration Order* that "because access to OSS is a separate network element, it is subject to the pricing standards in section 252(d)(2) and the Commission's TELRIC pricing rules."¹¹² Therefore, a separate charge for the "OSS UNE" would need to be based on forward-looking costs over the total demand. To the extent that the OSS benefits both retail and wholesale customers, the relevant demand would be the total users of all network elements (including the incumbent's retail customers). This is the same total demand over which expenses recovered through annual cost factors are spread; therefore, there is little point in developing a separate charge.

(215) Finally, a separate charge for OSS introduces a significant risk of double-recovery of OSS expenses. That risk can be prevented if the OSS costs are recovered through expense factors.

(216) For all of the reasons I have enumerated, to the extent that ILECs are permitted to recover OSS costs, such costs should be recovered in the same way that all other forward-looking recurring expenses and support investments normally are captured, through annual cost factors.

¹¹² *Virginia Arbitration Order* ¶ 538.

2. If The Commission Were To Allow A Separate UNE Charge For Access to OSS (and It Should Not), Such A Charge Would Have To Reflect TELRIC Rules.

(217) As I have noted previously, *if* the Commission were to allow a separate charge for the access to OSS UNE, such a charge must not violate TELRIC principles. A cost study for such a charge should reflect forward-looking costs that an efficient provider would incur to meet the total demand for a product, service or function using the best available technology, not *actual incurred* costs. The incumbents, however, have erroneously sought to have their already incurred costs of opening their OSS to competitors recovered through separate charges imposed only on CLECs. That is clearly inappropriate.

(218) The costs for gateways and system upgrades that the incumbents developed or will develop to allow access to their systems reflect the limitations of the legacy systems in place and the approach that the incumbents used to implement access to OSS. The actual cost of these systems or upgrades does not necessarily have any relationship to the cost of a forward-looking OSS that was not tied to existing legacy systems.

(219) To correctly reflect forward-looking costs of OSS, an incumbent would have to determine the forward-looking costs that an efficient provider would incur to build its OSS using the best available technology. In a reconstructed local network, the incumbent would design its OSS to accommodate multiple providers from the start. Neither the entire capital cost of those OSS nor the ongoing maintenance cost for such systems would be attributable solely to competitors.

(220) The Bureau agreed, at least in part, with this reasoning in the *Virginia Arbitration Order*:

As to the second question, to be consistent with TELRIC, the OSS charge must be based on the forward-looking cost of deploying efficient systems. We agree with AT&T/WorldCom that one way to develop a TELRIC-based OSS rate is to calculate the cost of systems that accommodate multiple providers from the start, rather than the cost of modifying legacy systems. Under that approach, AT&T/WorldCom are correct that neither the capital cost nor the maintenance expense would be attributable solely to competitive LECs. AT&T/WorldCom do not, however, provide any information whatsoever on the cost of this type of forward-looking OSS.¹¹³

(221) However, by placing the burden of proof on the CLECs, the Bureau's finding has the inappropriate effect of eliminating the incumbent's burden of demonstrating that its proposed costs do not, in effect, exceed the total forward-looking costs of an element.¹¹⁴ Neither Verizon nor any other incumbent of which I am aware has provided even a shred of evidence that the cost of a multi-user system, designed from the ground up rather than as a modification to legacy systems, would cost substantially more to build than a single-user (monopoly) system designed today. Nor am I aware, independently, of any reason to believe that the OSS expenses captured in annual cost factors would increase significantly, if at all, for a purpose-designed multiple-user (rather than retrofitted single-user) environment. If anything, I would expect the expenses for maintaining a system that was designed from the start to accommodate multiple users would be less than the expenses for operating and maintaining a legacy monopoly system that has been retrofitted to accommodate multiple users. Therefore, I believe that the Commission should establish a presumption (which the ILECs could rebut with *specific* evidence) that the costs of a multi-user system would be the same as the costs that are forecast through expense factors based on recorded data about the incumbents' actual OSS costs.

(222) Furthermore, even if the Commission (inappropriately) were to allow incumbents

¹¹³ *Virginia Arbitration Order*, ¶ 539 (footnotes omitted).

¹¹⁴ *Local Competition Order* ¶ 680.

not only to impose a separate UNE charge, but also were to allow the charge to be imposed only on customers of new entrants, then that charge would then need to capture *only* the costs that would be additional for a multiple-user system. Only the *incremental* cost of developing a multiple-user system versus a single-user system could possibly be attributable to new entrants alone. As I have indicated, there is no evidence that a multiple-user OSS would impose any incremental costs on the incumbent at all in a forward-looking environment. Therefore, any incremental cost attributable to CLECs is likely to be negligible. Furthermore, the calculation of any charges that applied only to competitors would require a forecast of demand for UNEs over time, a process that is sure to be extremely contentious and is rife with possible pitfalls.

(223) Therefore, I urge the Commission to reject the idea of a separate UNE charge for OSS, particularly any charge that inappropriately seeks to make competitors responsible for the entire cost of moving to a competitive market.

3. CLECs Should Not Be Required To Bear All Costs Of Opening An ILEC's OSS To Competitors.

(224) Competitors should not be asked to bear the full costs of opening an incumbent's OSS to competitors. It does not make sense to impose the costs of a multi-provider environment solely on the end user of new entrants. Moreover, there is no evidence that the costs will vary with competitive local exchange carrier demand. Neither competitors nor their customers are the true cost causers of these OSS costs.

(225) To the contrary, the one-time development costs to allow access to an incumbent's OSS are caused by the transition to a competitive environment, not by new entrants' orders for UNEs. Therefore, it is inappropriate to recover these costs solely from new entrants. If the Commission authorizes recovery of these competitive onset costs at all, they should be

recovered in a competitively neutral way. Because new entrants incur costs for their own portion of the electronic gateway between their operation and the incumbent's OSS, the simplest competitively neutral mechanism for cost recovery is to require each company to bear its own costs for access to OSS.

(226) The need to open the ILECs' OSS to competition arises from the legal requirement that incumbent local exchange carriers, who previously operated in a single carrier environment, open their existing OSS to access by multiple, competing carriers. In this case, the government mandate results in what can be called "competition-onset costs," (sometimes known as competition implementation costs). Attributing these costs solely to new entrants would misidentify the cost causers.

(227) It is inappropriate for incumbents to recover competition-onset costs through separate access to OSS UNE charges for several reasons. First, such charges would create a formidable barrier to entry by allowing incumbents, solely because of their control over bottleneck monopoly inputs, to pass these costs on to new entrants that must also cover their own competition-onset costs. Second, one-time development costs are not the forward-looking costs of providing an element, but rather costs already incurred to transition to a competitive market. All consumers will enjoy the benefits of competition. Third, as previously discussed, allowing incumbents to pass these costs on to new entrants alone creates an incentive for the ILECs to be inefficient and, indeed, encourages them to maintain their current inefficient OSS practices. Competitors should not be asked to bear the cost of that inefficiency. Fourth, allowing recovery of competition-onset charges through a separate charge raises a number of practical considerations. I discuss each of these reasons in more detail below.

(228) Allowing incumbents to impose competition-onset costs on new entrants creates a

barrier to entry. To charge new entrants for the costs of opening an incumbent's OSS to competitors, as the incumbents propose, would make new entrants and their customers entirely responsible for effectively paying the costs to make competition possible. Requiring new entrants to shoulder all of the incumbent's OSS-related costs for the transition to a multi-provider marketplace would impose a disproportionate burden on new entrants (who themselves concurrently incur costs to develop systems on their side to exchange pre-ordering, ordering, provisioning, maintenance and repair, and billing data with incumbents electronically). If the Commission were to allow this imposition of gateway costs, *the new entrant would have to pay to develop two gateways, while incumbents would pay for none*. That is, new entrants would have to bear costs that incumbents did not, and does not, bear. This is the classic definition of a barrier to entry. Such a barrier would deter the very competitive entry that the legal requirement for access to incumbents' OSS is intended to foster.

(229) The Commission can avoid creating an unnecessary barrier to entry by properly classifying the incumbents' one-time development costs for opening their OSS as competition-onset costs and recovering those costs in a competitively neutral manner.

(230) There are several competitively neutral cost recovery mechanisms by which to recover competition-onset costs. The simplest, and arguably fairest, mechanism is to have each market participant bear its own costs for the gateway systems that are necessary to permit new entrants to access an incumbent's OSS. As I have already noted, the incumbent is not the only carrier that incurs costs to create the necessary electronic gateways; every new entrant that seeks to establish electronic access to an incumbent's OSS also incurs costs for its end of the gateway and for training its personnel on the use of the incumbent's systems. Thus, the Commission should not approve any explicit charge for opening access to an incumbent's OSS, but rather

have the incumbent and each entrant bear its own costs of constructing its own particular gateway(s).

(231) In the alternative, the Commission could direct that an incumbent calculate a per-line surcharge that would be the equivalent of recovering the incumbent's prudently incurred costs of opening its OSS from all end-users, whether they subscribe to an incumbent's local exchange service or that of a competitor. New entrants would pay this surcharge to the incumbent directly, on behalf of their end users. The incumbent would have the option of absorbing its *pro rata* share of the competition-onset costs or seeking authority from state regulators to pass the surcharge along to its end-user customers.

(232) If each carrier pays the cost of creating its own gateway, an incumbent's customers who chose not to switch carriers may be asked to bear costs for a gateway designed to promote competition. This is entirely reasonable. The creation of a gateway is a necessary condition for the move to a multi-provider competitive local exchange market. All consumers, whether they choose to change carriers or not, will be the beneficiaries of the existence of local competition. Incumbents will have to compete on price and service quality with new entrants; customers who remain with the incumbent will benefit from the lower prices, a greater array of services, and the more rapid introduction of technology that competition will compel. Thus, because all consumers—including those of the incumbent—will benefit from the price reductions and new service offerings that are the result of increased competition, it is perfectly reasonable to expect them to bear some of the cost of the gateway that is a necessary adjunct to the creation of a competitive marketplace.

(233) The alternative competitively-neutral approach—the above-described end-user surcharge—would not impose a disproportionate burden on the incumbents or their retail

customers. Once again, all customers benefit from the creation of conditions that make local exchange competition possible, whether they are incumbent's customers or customers of a new entrant. The requirement that incumbents provide electronic access to its OSS to all local exchange providers is one of the conditions necessary to make a multiple provider environment workable, much like the requirement for number portability. The surcharge mechanism that I have described is analogous to competitively neutral mechanisms that have already been approved for the recovery of number portability costs, and does not impose a disproportionate burden on the incumbents. If anything, because new entrants will have to bear all of their own costs for electronic access to OSS plus a share of the surcharge, the incumbents' burden under this method of cost recovery is disproportionately light. That is one reason why my primary recommendation is for each company to bear its own costs.

(234) Moreover, the Commission should recall that the RBOCs benefit significantly from fulfilling the requirements of the competitive checklist for entry into the interLATA market. Providing access to its OSS is one such requirement. Passing through a small monthly surcharge to their local exchange customers is little or no burden on the RBOCs compared to the substantially greater benefits that they will derive from in-region, interLATA entry.

(235) A relatively small competitively neutral surcharge would impose a manageable price on all telecommunications users for the benefits of creating a competitive local exchange environment that can bring down prices and increase service quality and choices for all consumers.¹¹⁵ In contrast, loading costs onto the new entrants alone would result in prohibitively

¹¹⁵ For example, in the *Virginia Arbitration*, proceeding, I calculated that an eight-cent per month per line surcharge would be sufficient to recover all of the Verizon's alleged one-time development access to OSS costs over a ten-year period. Rebuttal Testimony of Michael R. Baranowski, Terry L. Murray, Catherine E. Pitts, Joseph P. Riolo and Steven E. Turner on Behalf of AT&T and WorldCom, Inc., filed August 27, 2001, in CC Docket Nos. 00-218, 00-249, and 00-251, pp. 146-147.

high proposed charges that would stifle competition.

(236) There are precedents for the treatment of OSS gateway costs as competition-onset costs that should be recovered in a competitively neutral manner. First, the California Public Utilities Commission required the incumbents to seek recovery of their OSS gateway costs through competitively neutral local competition implementation charges, not charges to competitors.¹¹⁶

(237) Second, the treatment that I propose for OSS gateway costs is directly analogous to the treatment that the Commission has prescribed for number portability costs. In its *Third Report and Order* in CC Docket No. 95-116, the Commission directed that incumbents may recover their costs of implementing local number portability from their end-users. Incumbents are not to recover local number portability implementation costs from the new entrants. Like number portability, the OSS gateway is a cost that an incumbent must incur to meet its legal obligations to enable local competition—in other words, a competition-onset cost.¹¹⁷

(238) The Commission has applied a two-pronged test to determine whether both interim and long-term number portability costs are being borne in a competitively neutral manner.¹¹⁸ The test requires that the method for recovering costs: “(1) must not give one service

¹¹⁶ California Public Utilities Commission D.98-12-079, *supra*, at 47-48.

¹¹⁷ In the *Virginia Arbitration Order*, the Wireline Competition Bureau found that the LNP precedent was not relevant to the issue of recovery of OSS costs because “Congress did not establish specific cost recovery requirements for OSS as it did for LNP.” *Virginia Arbitration Order* ¶ 543. However, although Congress explicitly required a competitively-neutral recovery mechanism only in the LNP sections of the 1996 Act, it did not preclude the adoption of such a mechanism for other functionalities that the ILEC must provide to the CLECs under the Act where, as here, the adoption of such a mechanism would be consistent with the pro-competitive intent of the Act.

¹¹⁸ Third Report and Order, *In the Matter of Telephone Number Portability*, CC Docket No. 95-116, adopted May 5, 1998, rel. May 12, 1998, ¶¶ 53-4.

provider an appreciable, incremental cost advantage over another service provider when competing for a specific subscriber; and (2) must not disparately affect the ability of competing service providers to earn a normal return.”¹¹⁹ My proposal for recovering the costs of OSS gateways meets the Commission’s criteria because all carriers will bear the costs of their own OSS gateways and have to recover those costs from their retail customers, whereas having the new entrants bear all gateway costs would give the ILEC a cost and competitive advantage over the CLECs.

(239) Additionally, if new entrants were forced to bear an incumbent’s full competition-onset costs, there is little chance that the incumbent would select the most efficient means for complying with the mandate to open its markets to competition. If the incumbent can comply with the statutory mandate at high cost but force new entrants to pay the cost, it is much less likely to face effective competition. The only way to create an incentive for the incumbents to comply with the mandate to open its markets to competition in the most efficient manner possible would be to force the incumbents to bear the cost of creating its own gateway.

(240) Any costs for elements that the incumbents expect to impose solely on competitors are an opportunity for them to disadvantage competitors, and, as such, require a much higher level of scrutiny to determine if such costs were appropriate and prudently incurred. Therefore, if the Commission should decide in this proceeding to allow incumbents to impose their gateway development costs on competitors (and it should not), it should emphasize that state commissions should scrutinize these costs carefully in determining rates to CLECs. The Commission should require that incumbents show that: (1) the costs were efficiently and prudently incurred and that they benefit new entrants exclusively; (2) the costs reflect no

¹¹⁹ *Id.* at ¶ 53.

duplication of effort across projects or that there was no duplication of functionality amongst the interfaces; (3) the costs were incurred to provide functionality that ultimately became or will become available to competitors, and exclude all costs for projects that did not come to fruition; (4) the costs do not include costs for interim solutions that have been, or soon will be, replaced; (5) no potential double-recovery of OSS costs through other UNEs exists; and (6) the gateway OSS costs have not already been recovered, in whole or in part, through previously adopted recurring prices.¹²⁰

(241) The difficult task of determining the extent of imprudent or non-forward-looking costs exists only if the Commission chooses to authorize an explicit “access to OSS” charge to new entrants or to create a surcharge on all telecommunications users to recover the incumbents’ asserted costs. If, instead, the Commission adopts my primary recommendation to have each competitor bear its own costs for access to OSS, the incumbents will have the correct incentive to minimize or eliminate inefficient costs, and the state commissions will not be placed in the unenviable position of having to determine the incumbents’ prudently incurred costs for their gateway systems.

(242) Regardless of how the Commission decides to treat the one-time development costs of access to incumbents’ OSS, the forward-looking maintenance costs of those systems should be recovered through annual cost factors. Software enhancement and maintenance is a normal part of an incumbent’s business and should be treated as such.¹²¹ Once again, these OSS

¹²⁰ For example, if recurring prices were ever based on expenses for 1996 or later and the costs of OSS development were not excluded from the calculation of expense factors, then the incumbents may have been recovering the costs of OSS access through UNEs in the meantime. To ensure no double-recovery, the incumbents would have had to back any such costs out of their expense factors for previously adopted recurring prices, or would have to do so now.

¹²¹ One incumbent, Pacific Bell (now SBC California), explained when discussing implementation costs: “[u]pgrades or enhancements to capabilities were not included in

support all uses of the incumbents' networks and should be spread across all demand.

(243) Furthermore, it is unlikely that the incumbents track maintenance costs for the systems they developed to open their OSS to competitors separately from other OSS expenditures. In many cases, the incumbents modified their existing systems to accommodate multiple providers. It is my understanding that work on the core systems accounted for a substantial portion of the initial development costs. It is entirely unclear how the incumbents could now reasonably segregate some portion of the cost of maintaining their core systems and assign them solely to competitors.

E. The Commission Should Adopt A “Reusability” Test As The Guideline By Which State Commissions Should Distinguish Between Recurring And Non-Recurring Costs. (NPRM ¶¶ 120-125)

(244) The key distinguishing characteristic between the costs that should be recovered in recurring charges and those that can be—but do not have to be—recovered as non-recurring costs is whether the cost, once incurred, is for facilities that can be reused to provide service to a subsequent customer. The cost of facilities or activities that can be reused should be recovered through recurring charges, not through non-recurring charges. Thus, a “reusability” test screens out recurring costs from potential non-recurring costs and can be implemented by asking, “Will the incumbent be able to reuse the benefit of this equipment or activity for itself or to provide service to another wholesale customer after the UNE customer requesting it now has ceased to use it?”, when considering any proposed non-recurring cost. In another sense, this test can be seen as screening out costs that create a relatively permanent asset in the incumbent’s network,

Pacific’s implementation cost filing.... These upgrades and enhancements would be part of the normal course of business.” Pacific Bell Response to AT&T Set 5, No. 88, Implementation Cost Phase of California Public Utilities Commission’s Local Competition Docket R. 95-04-043, I. 95-04-044.

as opposed to costs that create an asset which will vanish when a specific CLEC discontinues use of a UNE.

(245) The CLEC-specific “reusability” approach is a principled means of reducing the number of activities for which non-recurring charges would be permitted (*see NPRM* ¶ 122), but one that allows the ILEC full recovery of its costs. A “reusability” test cleanly eliminates entire categories of cost from consideration in developing non-recurring costs and charges. Based on this test, no capital costs belong in the non-recurring costs for unbundled network elements, because all capital items could be used to supply service to another customer. This is true for plant dedicated to a given customer premises, such as the drop and the Network Interface Device (“NID”), as well as plant that can be used for many customers, such as general purpose computers, testing equipment and switches. This test also excludes all of the labor used to install that plant, because once the plant has been installed to serve one customer, another customer at the same customer premises could reuse that plant at no additional cost for that plant. These costs, to the extent that they were otherwise consistent with proper forward-looking cost principles, would be recovered by the ILEC through recurring charges.

(246) Furthermore, as a matter of economic principle, an incumbent should reflect capital costs and field-work costs in its *recurring* cost studies, rather than its *non-recurring* cost studies. If incumbents recovered capital and other related costs in non-recurring charges, this would enlarge the barrier to entry that non-recurring charges inherently create. Shifting the recovery of costs that should be more appropriately recovered in recurring prices to non-recurring charges would convert them to sunk costs for the new entrant, thereby greatly increasing the size of the barrier to entry. Transforming these costs into non-recurring charges also would lessen the likelihood that a new entrant could fully recover these costs from its end

users.

(247) Under the reusability test, this leaves the cost of performing the transaction as the only costs that can be recovered in non-recurring charges for unbundled network elements. These are the costs of actually performing those tasks of pre-ordering, ordering, and provisioning that cannot be reused and must thus be repeated for each new customer.

(248) Not all one-time activities, even those associated with a particular service order, are properly considered non-recurring costs. Consider, for example, the loop itself. The incumbent might construct an entire new loop to provide service in response to a service order request. That circumstance does not, however, change the basic fact that the construction of the loop is properly treated as a recurring cost. Proper identification of one-time costs is particularly important in a competitive environment where more than one local exchange carrier (including the incumbent) may use a particular facility at different points in that facility's economic life. If the first telecommunications provider to use the facility bears all the forward-looking costs of a one-time activity benefiting multiple users, then obviously the first user will be forced to pay more than its fair share.

(249) Thus, a reusability test is both relatively simple and easy to apply and is a standard that acts to minimize a potentially significant barrier to entry in a way that makes economic sense. Its application is also necessary to prevent all costs from being assigned to the first customer who requested the activity. To do otherwise would effectively give a "free ride" to other parties that subsequently use the same activity, because they would enjoy the benefits of the activity without sharing any of the non-recurring cost associated with the activity.

(250) Equally important, a "reusability" test also ensures that the ILEC will recover its

full economic cost in a manner that rationally corresponds with how those costs are incurred. The test does this by providing immediate compensation for costs that the ILEC incurs on behalf of a CLEC that do not result in some form of asset that the ILEC will retain if the CLEC should cease to use the UNE.¹²²

(251) Thus, in response to the *NPRM*'s question (§ 122), installation of a cross-connect at a feeder-distribution interface ("FDI") should not be subject to a non-recurring charge if the facility remains in place after a customer terminates service, because it can be re-used. The reason why this activity is recurring is that the connection remains in place when a service disconnects; the incumbent can reuse that connection for a subsequent customer when that customer establishes new service to the disconnecting location. Hence, this one-time activity benefits all future users of a particular telecommunications facility and the costs of the activity are properly characterized as recurring.¹²³

(252) Requiring the ILEC to collect the cost of the cross-connect through recurring charges is not only reasonable but also corresponds with how plant is actually constructed. When ILECs build new loop plant to serve new customers, they do not subdivide the work into separate tasks that they perform on a "piecemeal" basis. Thus, ILECs do not build plant by first

¹²² If the Commission adopted the approach of allowing NRCs for every activity related to a competitive LEC's order, it would indeed need to consider a mechanism for refunds (if practicable) to compensate prior users when subsequent users benefit from the work or activity. See *NPRM* § 124. As I describe below in my discussion of line conditioning, however, a workable refund mechanism would be extremely difficult to develop and implement. The better solution by far is to adopt the reusability test as the standard for determining whether a cost will be recovered through recurring or non-recurring charges. The reusability test eliminates the need for an (impractical) refund mechanism.

¹²³ Conversely, if – but only if – a CLEC that ordered a cross-connect from the MDF to connect a loop to its collocation space is the *only* party that benefited (or could benefit) from the work, the cost of that work would be properly considered non-recurring.

laying out each distinct piece of equipment in the loop but leaving gaps between them and then returning later to actually connect all the parts.¹²⁴ Instead, an efficient ILEC will connect loop equipment while it is on the job site to create a functional loop. As such, these costs are part of the original investment associated with placing plant.

(253) Including the cost of any one-time activity (such as field cross-connection costs) in non-recurring costs would be improper, because it would result in double recovery of the relevant costs whenever the activity was reusable. For example, given that the loop recurring cost captures the entire investment and expense for installing the entire loop, it would result in double counting to recount as a non-recurring cost any of the field-work that is necessary to first establish individual loops and that the incumbent can reuse to supply the same loop to future customers. In particular, this means that field-work costs should be included in the recurring cost study. Again, the unbundled loop element is defined to include a fully connected loop from the customer's premises to the central office. Field installation activities are necessary to produce the loop element. Therefore, the cost of field installation activities is properly considered a recurring cost.¹²⁵

¹²⁴ Indeed, any ILEC claiming to do so would simply be demonstrating that its operations are truly inefficient. Allowing an ILEC to impose a non-recurring charge for each separate one-time step of the construction process, or for each one-time activity, would give the ILEC insufficient incentive to implement superior processes (including mechanized processes), even when it would be efficient to do so.

¹²⁵ See *Local Competition Order* ¶ 675 (“The incremental cost of connecting a new residence to its end office, however, is the cost of the loop”); *id.* ¶ 682 (“We conclude that, under a TELRIC methodology, incumbent LECs’ prices for interconnection and unbundled network elements shall recover the forward-looking costs *directly attributable to the specified element*, as well as a reasonable allocation of forward-looking common costs” and “[t]he forward-looking costs directly attributable to local loops, for example, shall include not only the cost of the installed copper wire and telephone poles but also the cost of payroll and other back office operations relating to the line technicians, in addition to other attributable costs”).

F. Any Methodology That Allows The ILEC To Impose Non-Recurring Charges Will Require An Adjustment To The Calculation Of Recurring Expenses To Avoid Double Recovery.

(254) The Commission asks whether, under the reusability test, it is “necessary . . . to back out certain costs from the calculation of expenses to avoid double recovery.” Underlying this question are two (correct) premises: (1) that the ILECs book expenses for one-time activities to the same accounts to which they book recurring expenses; and (2) that the recurring expenses will be developed (as they are in every cost study of which I am aware) using ILEC expense data, at least as a starting point. Because these two premises hold in all cases, it will always be important to back out from the expense accounts any costs recovered through non-recurring charges before using data from those expense accounts to develop forward-looking recurring expenses.

(255) The reusability test is no exception to this rule. The reusability test, however, does limit the extent of costs that are recovered through non-recurring charges and thereby limit the extent to which it is necessary to “back out” non-recurring costs from the expense accounts used to develop recurring expenses.

(256) In contrast, the ILECs’ approach of recovering the costs for virtually every one-time activity through non-recurring charges *maximizes* the extent to which expenses are recovered through non-recurring charges and thereby maximizes the need to back out non-recurring costs from the expense accounts used to develop recurring expenses. This approach to non-recurring costs means that the ILECs must identify and remove *all* of the costs for one-time activities from their expense accounts before making any use of those accounts to calculate annual cost factors (“ACFs”).

(257) This is easier said than done because, as I noted above, ILECs do not identify

one-time and ongoing activities separately in their books of account. Therefore, Verizon proposed in the Virginia arbitration to back out non-recurring *revenues* as a proxy for non-recurring costs. As the *Virginia Arbitration Order* found, this approach would “create a significant likelihood that there is a mismatch between the costs recovered through NRCs and the costs not recovered through ACFs.”¹²⁶

(258) The Commission has also asked how carriers that have paid a non-recurring charge for a particular activity should be credited if the ILEC subsequently eliminates the ILEC and recovers those same costs through recurring charges. *See NPRM* ¶ 123.¹²⁷ As the Commission suggests, converting costs that were previously treated as part of a non-recurring charge to part of a recurring charge creates a potential for double recovery, because CLECs that have previously purchased a UNE, having already incurred the cost as a non-recurring charge, would begin paying for the same cost again as part of the new recurring charge.

(259) A traditional regulatory solution to this sort of problem is to make payments under an interim tariff or agreement subject to refund and to require a true-up at the time that final prices are approved. It is my understanding, however, that the non-recurring charges competitors have already paid were not likely to have been, in general, subject to refund. Thus, it is my understanding that a simple true-up could violate the prohibition against retroactive

¹²⁶ *Virginia Arbitration Order* ¶ 584.

¹²⁷ The Commission has asked whether the “reusability” test would “reduce the number of activities for which NRCs would be permitted.” *See NPRM* ¶ 122. The test probably would have that result. However, whether or not the test reduces the number of activities for which the ILEC can collect an NRC is beside the point. The issue here is the proper costing methodology for distinguishing between recurring and non-recurring costs. For the reasons that I have described, the reusability test permits an ILEC to recover all of its forward-looking costs, while preventing double recovery of costs—regardless of the precise number or amount of non-recurring costs that are determined under the test.

ratemaking.

(260) In the alternative, I believe the Commission could avoid double-collection by reducing the prospective recurring charges paid by those competitors that previously paid non-recurring charges in excess of the approved final non-recurring charges. Specifically, should the Commission change its UNE costing guidelines in a manner that causes any state to shift any significant cost from a prior non-recurring charge to a new recurring charge, the Commission should also require the incumbent to compute the difference between the non-recurring charges that the competitor has already paid and the final non-recurring charge. That difference would become an offset to the final recurring charges, such that the competitor would pay no recurring charges until all of the “prepaid” recurring charges were depleted.

G. The ILECs’ Retail Non-Recurring Charges Should Not Be Taken Into Account In Determining Proper UNE Non-Recurring Charges—Particularly As A Matter Of National Policy. (See *NPRM* ¶ 125.)

(261) Attempting to formulate some guideline for non-recurring UNE charges that relies on a relationship with ILEC retail non-recurring charges would likely be an immensely complex and probably fruitless endeavor. One reason this is unlikely to be a useful pursuit is that many non-recurring charges for CLECs have no retail analogs. Another reason is that the approach of relying on retail non-recurring charges falsely presumes there is some consistency between retail non-recurring charges among states.

(262) To the contrary, I note that some states have updated retail non-recurring costs and charges recently, while others have not done so for decades. Some states may have used some form of forward-looking cost standard to develop retail non-recurring charges while others used an embedded approach or perhaps no cost-based standard whatsoever. Thus, at least some retail non-recurring charges were developed through a cost methodology reflecting the ILECs’

monopoly position, their inefficient practices, and rate-of-return cost methodology—all of which are incompatible with a forward-looking cost approach. Some states may have required that incumbents lower non-recurring charges to certain classes of retail customers by recovering a portion of those costs in recurring charges, while other states may not have done so, or may have done so for a differing amount or for differing classes of customers. Finding some viable basis for a national standard involving retail prices is unlikely; even investigating that issue would be a major endeavor.

(263) If one did find some consistent basis by which states set retail non-recurring charges, one would then need an additional analysis to determine what, if any, relationship that approach should have to the forward-looking method applied to UNEs. That step would likely also be substantially complex and contentious. Thus, I do not believe it would be prudent to link UNE non-recurring charges to seemingly analogous retail non-recurring charges.

H. Reducing Or Eliminating The Allocation Of Common Costs To Non-Recurring Charges, While Acceptable, Would Not Contribute Significantly To Resolving Any Concern About High Non-Recurring Charges. (See *NPRM* ¶ 125)

(264) Given the Commission’s current guidelines concerning common costs and overheads, the level of these costs in a UNE study should not be so significant that they will change non-recurring charges substantially one way or the other. As long as the Commission retains the requirement that costs should be directly assigned to UNEs to the greatest extent practicable and that common costs and overheads must be forward-looking and efficient, I do not expect that this issue should be significant. Thus, reducing or eliminating the allocation of common costs and overhead would not “resolve concerns about the levels of NRCs.” *See NPRM* ¶ 125.

(265) If, however, the Commission changes its standard in a manner that significantly increases the level of common and overhead costs applied to activities for which non-recurring charges are imposed, then limiting their application to nonrecurring charges may become a more significant issue. Unfortunately, any allocation less straightforward than an equal percentage markup to all direct costs is likely to generate fresh controversy and complicate UNE costing and pricing dockets.

I. CLECS Should Not Be Charged For Disconnection Costs At The Time Of Connection. (*NPRM* ¶¶ 126-128.)

(266) For all reasons discussed in the *NPRM*, CLECs should not pay for disconnecting service at the time that they pay for connection of a new UNE. Requiring a new entrant to pay for disconnection at the time it orders a connection violates principles of cost causation, as the incumbent does not incur the costs of disconnection until or unless a facility is disconnected—and, in many cases, incurs no disconnection costs at all. Moreover, because the length of the period between connection and disconnection is uncertain, recovering disconnection costs through an up-front non-recurring charge raises needless “time value of money” issues.

(267) The argument that disconnect costs have traditionally been bundled in the retail market is not sufficient justification to include them in UNE non-recurring charges. It does not follow that new entrants should likewise pay for disconnecting at the time they pay for connecting a new unbundled network element. The rate design policies that were “traditionally” followed in a monopoly retail market have no necessary application to a wholesale environment, particularly when the wholesale environment involves transactions between a dominant incumbent provider and its dependent competitors.

(268) The typical rationale for bundling connect and disconnect charges for retail

customers is the difficulty of levying and collecting a disconnect charge after the termination of service to a customer who may be leaving the incumbent's service territory. This rationale has limited applicability in the context of an ongoing wholesale relationship between the incumbent and another local exchange provider in its service territory. A new entrant must maintain its standing as a wholesale customer with the incumbent to continue to provide service in the local exchange market – and thus has every incentive to pay its bills. Moreover, many CLECs are large companies.

(269) In any event, disconnection does not occur in all cases when a new entrant or end-user ceases to use facilities. Many facilities are not physically disconnected when an end-user terminates its service. For example, when a new entrant serves an end user using combined unbundled network elements, there would be no physical disconnection of facilities required when the new entrant ceased to use those facilities. Instead, only a command from the OSS would be necessary to deactivate or activate the service. In such cases, the ILEC would incur no disconnection costs, and there should be no disconnection charge. To assess a charge in such circumstances would violate the principle that costs must be recovered in the manner in which they are incurred. Because the ILEC did not incur disconnection costs, assessment of a charge for such costs is clearly improper.

(270) Moreover, if the end-user became the customer of the new entrant by migration from the incumbent, rather than as a new install, the end-user would already have paid for disconnection when that end-user initially took service from the incumbent (as long as the incumbent had bundled disconnect costs into the installation charge). That is, an end-user who migrates would, in effect, be charged twice for disconnection, once when beginning service with the incumbent and then again when moving to a competitive provider.

(271) Similarly, for example, if an end-user switches from one UNE-L provider to another, the disconnection of the first carrier's service would consist of lifting the same wire that must be lifted and moved to connect the loop for the second carrier. Thus, allowing a bundled connection and disconnection charge would require a cumbersome case-by-case analysis of why the disconnection occurred and what subsequently happened to determine whether a refund or some other adjustment is due.

(272) If disconnection costs could properly be recovered up-front (and they cannot), those up-front charges would have to be discounted to account for the time value of money based on the average amount of time that a CLEC keeps a customer.¹²⁸ However, even if ILECs could supply sufficient data to allow a reasonable industry-wide calculation, an average calculation would unreasonably discriminate among CLECs.

(273) A present worth factor applied to the cost of disconnection does not solve the problem. For example, a successful new entrant might continue to lease a particular unbundled loop throughout the course of providing service to several different end-user customers (at the same location) over many years.¹²⁹ In that context, it makes no sense to force the new entrant to pay the incumbent for a future disconnect in advance, even at a discounted level. Nor does the discounting eliminate additional barrier to entry created by up-front payment for future work.

(274) Even if the ILECs could supply data regarding the frequency of disconnections on

¹²⁸ *NPRM* ¶ 128.

¹²⁹ For example, a new entrant might choose not to disconnect customers at the time they vacate particular premises. The advantage of that decision is that, once the same premises are reoccupied, the new tenant would have a "warm dial tone" to the new entrant's business office. The alternative is either to eliminate the efficiency of maintaining warm dial tone or perpetually to renew the incumbent's monopoly by forcing all locations to return to the incumbent's service whenever ownership changes.

an industry-wide basis for each state that could be used in a calculation of NPV, it would still not enable an equitable calculation of the NPV of disconnection, because it is highly likely that different competitors will experience substantially different disconnection rates. This is particularly likely for competitors focused on different types of customers. Worse, a uniform calculation would penalize competitors who do a better job of retaining customers than others.¹³⁰

(275) Breaking out disconnect costs—*i.e.*, requiring the ILEC to collect the disconnect charge only when the disconnection has actually occurred—provides the correct price signals to all service providers. “Unbundled” non-recurring charges for installation and disconnection reward good service and punish bad service. The rate of customer churn for competitors should be inversely correlated with the desirability of their service offerings. With “unbundled” non-recurring charges for installation and disconnection, providers of superior service will reap the benefit of the longer customer retention intervals attributable to that superior service, and providers of inferior service will bear the higher disconnection cost—on an NPV basis—attributable to their more rapid customer churn. In contrast, proposals to build an average recovery of cost for customer disconnection into the cost of all service orders based on an average customer retention interval would penalize the provider of superior service and reward the inferior provider by equalizing the disconnection cost that each incurs.

(276) Requiring collection of disconnect costs at the time of disconnection minimizes the initial barrier to entry and more closely links costs and cost recovery with the manner in which the incumbent actually incurs costs, thereby eliminating the effect of debatable

¹³⁰ Although all providers experience disconnects that are not related to quality of service, such as customers moving out of the area, CLECs with poor service will experience a higher incidence of disconnects and therefore have a shorter-than-average retention period. Spreading disconnect costs over the average retention period across all CLECs will therefore cause the CLECs with higher retention rates to bear some of the poor-quality CLECs’ costs.

assumptions about the future level of customer churn. It also provides the correct signals to all service providers.

(277) For all of these reasons, a disconnect charge should be only be assessed if and when the new entrant asks the incumbent to disconnect facilities, and not before. This makes the disconnect charge follow the principles of cost-causation. Allowing an ILEC to assess the disconnect charge at the time of installation would simply exacerbate the barriers to entry that a CLEC already faces.

J. ILECs Should Not Be Permitted To Impose Separate Non-Recurring Charges For “Loop Conditioning.” (NPRM ¶¶ 129-130)

(278) Prices based on costs that comply with forward-looking economic cost principles would not reflect an additional non-recurring charge for loop “conditioning.” Loop “conditioning” refers to modifications to embedded loop plant facilities to remove equipment or plant arrangements that would impede the transmission of DSL-based services.¹³¹ An efficient, forward-looking network architecture would not deploy load coils, excessive bridged taps, or repeaters, and would not require removal or conditioning of facilities.

(279) Non-recurring “conditioning” charges are inconsistent not only with forward-looking economic costing principles, but with the incumbents’ own guidelines. It is my understanding that the network engineering guidelines in place for more than two decades call for a loop architecture that does not deploy load coils, excessive bridged taps or repeaters (that

¹³¹ As Mr. Riolo states in his Declaration, the term “conditioning” has traditionally been used in telecommunications to refer to situations in which equipment must be *added* to a circuit to enable that circuit to perform to tighter engineering parameters. In contrast, to make certain loops in its embedded plant DSL-capable, an ILEC must *remove* unnecessary equipment from the circuit, such as load coils or excessive bridged taps. This might be called more precisely *deconditioning*.

inhibit the provision of advanced services such as ISDN and DSL-based services). Thus, the “conditioning” performed by ILECs today is the result of their own decision not to follow industry guidelines that were promulgated decades ago. As Mr. Riolo explains in his concurrently-filed declaration, a forward-looking network is designed to meet Carrier Serving Area (“CSA”) guidelines, which have been the standard for more than 20 years. A network built to CSA guidelines does not include inhibitors such as load coils and excessive bridged taps that require loops to be “conditioned” before they can be used to provide DSL-based services. Indeed, as discussed below, even the incumbents (generally) acknowledge that a forward-looking network would not require conditioning.

(280) Thus, the premise that incumbents must remove load coils, excessive bridged taps or repeaters to render a loop suitable for the provision of DSL-based services has no place in a non-recurring pricing proposal, much less one based on forward-looking costs.

(281) This conclusion holds for loops of any length. As Mr. Riolo testifies, in a forward-looking network loops that are longer than 18,000 feet would be provisioned over DLC systems and would therefore not need conditioning. Consequently, it would be inappropriate for state commissions to allow non-recurring charges for loop conditioning even in “extraordinary circumstances, such as copper loops that are longer than 18,000 feet.”¹³² Because the features that must be deconditioned to support DSL do not exist in a forward-looking recurring cost analysis, it is inconsistent to include them in a non-recurring cost analysis. *Doing so violates basic costing requirements.*

(282) As an initial matter, costs for loop conditioning are not properly classified as non-

¹³² See *NPRM* ¶ 130.

recurring costs, because a conditioned loop could be re-used by other parties. Thus, conditioning charges may lead to one competitor paying for functionality that will benefit future users, with the incumbents' own DSL services being among the primary beneficiaries. As I have already noted, if the first telecommunications provider to use the facility bears all the forward-looking costs of a one-time activity benefiting multiple users, then obviously the first user will be forced to pay more than its fair share. This reasoning, in part, led to the reusability test that I advocate be used in determining which costs should be considered "recurring" versus "non-recurring."

(283) As I explained above, assessing a non-recurring charge for "conditioning," while assuming a truly forward-looking network architecture for purposes of recurring costs, would violate the forward looking economic cost requirement for total cost minimization and create a significant risk of double-counting. For example, the monthly recurring charge for basic unbundled loops should reflect the cost of a network that deploys fiber feeder and DLC for long loops. These monthly recurring charges will recover *all* costs for building a network without DSL inhibitors such as load coils and excessive bridged tap. Thus, every penny of cost included a stand-alone "conditioning" non-recurring charge would duplicate a function (the provision of a "conditioned" loop) already fully incorporated in the incumbent's recurring cost—and would result in competitors paying twice for the same functionality.

(284) A simple example illustrates this point. Suppose two computer manufactures exist: "Manufacturer A," which started in business in 2001 and has produced numerous 2.0 GHz computers at an economic cost of \$1,500 each, and "Manufacturer B," which started in business in 2002 producing 2.8 GHz computers at an economic cost of \$1,200 each. To obtain a 2.8 GHz processor chip and upgrade an existing 2 GHz machine costs Manufacturer A an additional \$400.

(285) Further suppose that a new computer application is introduced in 2003 that

requires a 2.8 GHz computer system to function properly. A growing number of customers want to use this application and will not buy a computer with less than a 2.8 GHz processor. How can Manufacturer A attract business from these customers? Manufacturer A would no doubt like to propose the following deal: “I will provide a 2.8 GHz computer for a base price of \$1,200—the same market price that Manufacturer B is charging for its 2.8 GHz computers. But, what I actually have in stock are 2.0 MHz machines. So you will also need to pay my \$400 cost to upgrade my existing stock to support 2.8 GHz service. This \$1,600 price is reasonable because the additional \$400 is an actual cost that I will incur.”

(286) Manufacturer A’s proposal would die a well-deserved death in a competitive market. Customers would not be willing to pay more than the \$1,200 price at which Manufacturer B can supply 2.8 GHz computers and recover its forward-looking economic cost.¹³³ The only compensation that Manufacturer A could reasonably expect to receive is the \$1,200 market price to produce a new computer with the 1 GHz capability. This would be the true forward-looking economic cost to Manufacturer A as well, because the economic value of its 2.0 GHz machines would have fallen to \$800, the difference between the market value of a 2.8 GHz computer and the \$400 cost that Manufacturer A incurs to upgrade its 2.0 GHz to 2.8 GHz. The decrease in value of Manufacturer A’s 2.0 GHz computers is an example of economic depreciation.

(287) The seemingly absurd proposal by “Manufacturer A” is, however, a close parallel to the incumbents’ proposals to collect a separate non-recurring charge for loop conditioning.

¹³³ This simplified example ignores many variables, such as the possibility that “Manufacturer B” would not be able to meet the entire demand for 2.8 GHz computers or that a “Manufacturer C” started business in 2003 and can supply the entire market demand with computers that cost \$1,000.

The incumbents seek to obtain full compensation for the forward-looking costs of a fully modernized loop that meets market requirements for a new advanced service *plus* additional compensation to bring its stock on hand up to the service standards reflected in that market price. Absent regulatory constraint, incumbents can sustain this type of uneconomic pricing scheme because they still possess market power.

(288) An incumbent's imposition of non-recurring "conditioning" charges could not survive in a competitive market. For example, imagine that competitors had already built or could readily build networks with the same scope as the incumbent's. If the incumbent's UNE loops were priced at forward-looking economic cost, that new competitor would incur the equivalent of the forward-looking cost incorporated into the existing UNE loop recurring costs to implement its network. Hence, to earn a normal return, such a competitor would need to charge only the current UNE loop price for loops that support DSL service. If such competitors existed or could plausibly exist—as would be the case in a competitive market—the incumbent would be driven out of the market if it insisted on maintaining huge non-recurring charges to "condition" its loops in addition to the forward-looking recurring cost of modern, DSL-capable loops.

(289) I am aware that this Commission has held open the possibility of allowing incumbents to recover the costs of "conditioning" through non-recurring charges. This policy, however, is not consistent with the Commission's other policies. The Wireline Competition Bureau acknowledged "a possible tension between our TELRIC pricing rules" and the Commission's previous ruling allowing recovery of conditioning charges.¹³⁴

(290) This tension exists because the pricing rules that the Commission adopted in the

¹³⁴ *Virginia Arbitration Order* ¶ 639.

UNE Remand Order make clear that any non-recurring “conditioning” charges must be based on forward-looking economic cost and may not permit a carrier to recover more than total forward-looking economic cost. Specifically, §§ 51.319(a)(3)(B) and (C) of the modified pricing rules state that recovery of line “conditioning” costs must be “in accordance with the Commission’s forward-looking pricing principles promulgated pursuant to section 252(d)(1) of the Act” and “in compliance with rules governing non-recurring costs in § 51.507(e).” Section 51.507(e) reads that “[s]tate Commissions may, where reasonable, require incumbent LECs to recover non-recurring costs through recurring charges over a reasonable period of time. Non-recurring charges shall be allocated efficiently among requesting telecommunications carriers, and *shall not permit an incumbent LEC to recover more than the total forward-looking economic cost of providing the applicable element.*” (Emphasis added.)

(291) Although the *Triennial Review Order* allowed recovery of costs of “routine network modifications,”¹³⁵ the Commission specifically deferred until this proceeding the issue of whether recovery for conditioning was inconsistent with the TELRIC rules. In the interim, the Commission left it to the State commissions to decide whether such costs should be recovered through recurring charges, non-recurring charges, “or not at all.”¹³⁶ And, in the *NPRM* (§ 129), the Commission recognized that loop conditioning “may not be necessary in a forward-looking network.”

(292) For all of the reasons that I have explained above, approval of any separate, non-recurring “conditioning” charges for incumbents would result in double-recovery of the forward-looking costs for fully “conditioned” loops. Thus, in my opinion, adoption of any positive non-

¹³⁵ *Triennial Review Order* ¶ 640.

¹³⁶ *Id.* ¶ 641.

recurring charge for “conditioning” would be inconsistent with this Commission’s prior determinations concerning the application of forward-looking cost principles to both recurring and non-recurring costs, which reflect sound economic policy.

(293) Even if the Commission adopted a more “real-world” approach, rather than retain the network assumptions underlying the current TELRIC rules,¹³⁷ it should not allow incumbents to assess non-recurring charges for bringing their plant into compliance with decades-old engineering standards. At least one incumbent, Verizon, has advocated a similar position. Verizon has not proposed to impose a non-recurring charge for load coil removal on loops less than 18,000 feet, because (among other things) those load coils would not comply with its current design standards.¹³⁸ Instead, Verizon recovered any conditioning costs for such loops in its maintenance costs. The Wireline Competition Bureau¹³⁹ found likewise that Verizon could charge for bridged tap removal “only when the bridged tap is within the current CSA standards.”¹⁴⁰ The *UNE Remand Order* recognized that networks built today should not require voice-transmission enhancing devices on loops not exceeding 18,000 feet.¹⁴¹

(294) Bringing an incumbent’s network into compliance with its own design rules benefits the network as a whole. Any costs associated with it are regular maintenance costs that are more appropriately recovered through recurring charges, to the extent they are recovered at

¹³⁷ See *NPRM* ¶ 130.

¹³⁸ Panel Testimony of Bell Atlantic - New York on Costs and Rates For Loop Conditioning and Line Sharing For DSL-Compatible Loops (Robert Brant, *et al.*), Public Service Commission of New York Case 98-C-1357, Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements, February 22, 2000, p. 11.

¹³⁹ *Virginia Arbitration Order* ¶ 640.

¹⁴⁰ *Id.* ¶ 642. That is, Verizon can only impose a non-recurring charge for removing tap when the total tap does not exceed 2,500 feet, with no single tap longer than 2,000 feet.

¹⁴¹ See *UNE Remand Order* ¶ 193. See also *Triennial Review Order* ¶ 641 n.1945.

all. Mr. Riolo explains that local exchange carriers routinely perform “conditioning” activities such as deloading loops as part of maintaining their loop plant. For example, incumbents typically reengineer older plant to eliminate DSL inhibitors such as load coils and bridged tap when growth requires an upgrade to the existing plant in any specific area. The incumbents’ booked maintenance expenses generally capture the cost of such network upgrades; therefore, to the extent that those booked expenses are used to forecast expenses, they are included in the recurring cost for the loop. Qwest (formerly U S West) conceded as much in an Oregon proceeding,¹⁴² thereby leading the Oregon Public Utility Commission to reject a non-recurring charge for “conditioning” to avoid double-recovery of costs already included in the maintenance expense portion of recurring loop charges.¹⁴³

(295) Similarly, there is evidence that BellSouth’s ongoing expenses include “conditioning” costs. Although BellSouth admits that it “conditions” to support T-1, DS-1, and ISDN services, BellSouth does not impose a separate non-recurring charge on its retail customers for this work.¹⁴⁴ Two possible conclusions can be drawn from this admission: (1) BellSouth is discriminating against competitive providers by charging them for “conditioning” while not charging its own retail customers, or (2) BellSouth is recovering “conditioning” charges as part of its routine maintenance charges, captured in recurring charges for loops. Either way, incumbents should not be permitted to assess a non-recurring charge on competitors for loop “conditioning.”

¹⁴² U S West stated that “the labor costs associated with unloading loops are currently included in the maintenance factor used to develop recurring costs.” Oregon Public Utility Commission Order No. 98-444 in Docket Nos. UT-138 and UT-139, entered November 13, 1998.

¹⁴³ *Id.*

¹⁴⁴ BellSouth witness Daonne Caldwell testified during a Florida UNE Pricing hearing that DS-1, T-1 and ISDN services would not work on loops with load coils, but that BellSouth did not charge retail customers to remove those load coils. *See* FPSC Docket 990649-TP, Tr. at 1388-1390.

(296) Through their ability to assess substantial non-recurring charges for DSL “conditioning,” incumbents have successfully leveraged control of the loop to constrain competitors from offering DSL services to customers that the incumbents themselves are not ready to serve. Substantial conditioning charges enable the ILECs to impede the CLECs from offering DSL service on their own, because such charges deter CLECs from serving customers whose loops would require conditioning. In this fashion, incumbents can maintain control of where and when DSL is available in a manner that coordinates with its own business plan—to the ultimate harm of competition and consumers.

(297) The ability of the ILECs to assess substantial charges for loop conditioning also gives them every incentive to perpetuate their inefficient conditioning practices. As long as they can collect these charges, the ILECs have no reason to implement the industry guidelines that would render conditioning unnecessary—and make their networks more efficient.

(298) Finally, the impropriety of a non-recurring charge for “conditioning” could not be corrected by re-allocating those costs among the present and future carriers providing service over the conditioned loop. Although I agree with the proposition that the costs should be shared by subsequent users in such a scenario, designing a workable arrangement to recapture previously paid non-recurring charges would be a substantial task. I see any number of difficult questions in devising a fair approach.

(299) First, any refund mechanism requires the identification of the specific subsequent carriers that should be required to bear part of the cost, and the degree to which they benefited from the activity. Would this cost-sharing requirement only apply to a carrier that provided DSL service over that loop immediately after the first carrier terminated its DSL service, or would it also apply to a carrier providing DSL over the loop three months later? Would the cost-sharing

arrangement be in effect for only the next carrier to provide DSL over the loop, or would subsequent carriers also be required to bear a portion of the cost? At what point, if any, in the future would carriers no longer be required to share the costs of the original conditioning activity? Would carriers providing services other than DSL (*e.g.*, ISDN or even dial-up Internet service over a long loop) be included in such an arrangement?

(300) Second, a cost-sharing arrangement requires an appropriate allocation of the costs. Would costs be allocated based on the number of carriers that benefit,¹⁴⁵ or would it be based on some measurement of how much each carrier benefited (*e.g.*, the duration of the carrier's provision of DSL service over that loop)?¹⁴⁶

(301) Third, a cost-sharing arrangement would require that incumbents track not only when the loop was conditioned, by whom and how much was paid in non-recurring charges, but also how the loop is being used by subsequent carriers. I do not believe that incumbents are entitled to information regarding the use of a loop by a competitor's customers. An incumbent would also need to be able to track former carriers so as to reimburse them if future carriers benefit. This could be quite challenging if any of the carriers ceases to lease loops through the incumbent or goes bankrupt.

¹⁴⁵ For example, assume that each subsequent carrier pays for its share of the conditioning cost based on the number of carriers to benefit. Carrier A pays initially to condition a loop and then loses the customer to Carrier B. Carrier B provides DSL over that same loop. Carrier B reimburses Carrier A for half the cost of conditioning and then itself loses the customer to Carrier C, which also provides DSL. Carrier C would then reimburse Carrier A one-sixth of the cost and reimburse Carrier B one-sixth of the cost, so that each carrier has now paid one-third of the cost.

¹⁴⁶ Assume that Carrier A pays initially to condition a loop and provides DSL over that loop for one year. Carrier A then loses the customer to Carrier B, which provides DSL over the loop for only 6 months before losing the customer to Carrier C. Carrier C provides DSL for 3 years. What portion of the conditioning costs should each carrier bear? When would those costs be evaluated—when a carrier begins its lease of the loop, or when it completes its lease?

(302) In addition, any workable cost-sharing arrangement would have to give the carriers enough information on which to base the decision of whether to provide service to a customer. A carrier would have to be able to determine if the loop had been conditioned at some point, as well as how much its “share” of the cost of prior conditioning would now be.

(303) Perhaps equally important, given the level of charges generally proposed by incumbents, I am not convinced that a cost-sharing arrangement would be useful. Those charges are generally sufficiently high so as to deter competitors from ordering loop conditioning services on loops that require it. Competitors will instead choose not to serve potential customers whose loops would require such expensive conditioning. In addition, the constraints placed on broadband capability imposed by the Commission’s *Triennial Review Order*, such as the phase-out of line-sharing arrangements,¹⁴⁷ may reduce the overall incidence of competitors ordering loops to provide DSL. In light of this situation and the relative complexity of any possible cost-sharing system, I do not believe it is practical or constructive to implement a cost-sharing program.

(304) This concludes my declaration.

¹⁴⁷ See, e.g., *Triennial Review Order* ¶ 264.

VERIFICATION PAGE

I declare under penalty of perjury that to the best of my knowledge the foregoing
Declaration is true and correct.

/s/ Terry L. Murray
Terry L. Murray

Executed on: December 16, 2003

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
Petition of AT&T Communications)	CC Docket No. 00-251
of Virginia, Inc., Pursuant)	
to Section 252(e)(5) of the Communications Act,)	
for Preemption)	
of the Jurisdiction of the Virginia)	
State Corporation Commission)	
Regarding Interconnection Disputes)	
with Verizon-Virginia, Inc.)	

In the Matter of)	
Petition of WorldCom, Inc. Pursuant)	CC Docket No. 00-218
To Section 252 (e)(5) of the)	
Communications Act for Expedited)	
Preemption of the Jurisdiction of the)	
Virginia State Corporation Commission)	
Regarding Interconnection Disputes)	
With Verizon Virginia, Inc., and for)	
Expedited Arbitration)	

In the Matter of))	
Petition of Cox Virginia Telecom, Inc.)	CC Docket No. 00-249
Pursuant to Section 252 (e)(5) of the)	
Communications Act for Preemption)	
CC Docket)	
No. 00-249)	
Of the Jurisdiction of the Virginia State)	
Corporation Commission Regarding)	
Interconnection Disputes with Verizon)	
Virginia, Inc. and for Arbitration)	

**DIRECT TESTIMONY OF
RICHARD J. WALSH
ON BEHALF OF AT&T¹ AND WORLDCOM, INC.**

JULY 31, 2001

¹ This Affidavit is presented on behalf of WorldCom, Inc. and AT&T Communications of Virginia, Inc., TCG Virginia, Inc., ACC National Telecom Corp., MediaOne of Virginia and MediaOne Telecommunications of Virginia, Inc. (together, "AT&T").

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SECTION I: Introduction and Background

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, EMPLOYER AND PRESENT POSITION.

A. My name is Richard J. Walsh and my business address is 33 Francis Drive, Hillsborough, New Jersey, 08844. I am presently providing consulting services to both AT&T Corp and WorldCom, Inc.

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS.

A. I began my telecommunications career in 1970 with New England Telephone (subsequently NYNEX) in the Central Office Equipment Installation Department. From 1975 to 1984, I held positions in the Customer Services Outside Plant Department, as a Completions Clerk to the Installation Control Centers, a Facilities Assignor, and Electronic Switching Systems (ESS) Conversions Facilities Assignor; and as a Technical Support Staff Manager for ESS Conversions where I trained, supervised and directed non-management craft and semi-craft personnel in ESS conversion activities, and provided technical support to organizations that were responsible for records conversion and mechanization. Additionally, I was responsible for technical matters associated with the dial for dial (electromechanical to electronic and digital) switch conversions. I was also instrumental in helping New England Telephone develop alternative plans for converting manual plant records to mechanized systems by defining system requirements and analyzing vendor software systems.

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In 1984, I interned at Bellcore (Bell Communications Research) to develop system and training requirements for its Facility Assignment and Control System (“FACS”) product line, later taking an assignment as a Staff Manager supporting its FACS conversion activities where I was responsible for systems training, methods and procedures development, and the staffing of a company-wide FACS system hotline.

From 1986 to 1993 at NYNEX, I managed the day-to-day operations of the Rhode Island Mechanized Loop Assignment Center (MLAC) which included service order provisioning, field assistance, engineering work order preparation and support, as well as FACS database maintenance. I also worked as an Outside Plant Engineer designing and preparing work prints for toll, exchange feeder, and distribution cable jobs, estimating work order cost analysis, assuring work order quality and managing construction activities.

In 1993, I worked with Bellcore in its Software Assurance Division. At Bellcore, I provided systems integration release testing support for the FACS product line. In 1995, I transferred to the Professional Services Division as Lead/Senior Consultant in the Telecommunications Business Process Consulting group. During this time, I provided consulting to major telecommunications firms in areas concerning Telecommunication Reform, Local Number Portability, Telecommunications Network Management (TMN) Systems Architecture, and

1 Non-Recurring Costs. In 1997, I retired from Bellcore to start my own
2 telecommunications consulting company.

3
4 I attended classes at Roger William's College with an emphasis in Business
5 Management, and in Economics. I have completed numerous technical and
6 management training seminars and curricula during my employment with New
7 England Telephone, NYNEX and Bellcore.

8
9 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

10
11 **A.** I am presenting the AT&T/WorldCom Non-Recurring Cost Model
12 ("ATT/WorldCom NRCM" or "NRCM") to assist the FCC in its efforts to
13 determine the appropriate non-recurring rates for Unbundled Network Elements
14 ("UNE") that will establish a competitive environment to stimulate local services
15 competition and to improve customer service.

16
17 In this testimony, I will address the technical assumptions that are
18 appropriate for a cost model that is designed to accurately estimate Non-Recurring
19 Costs ("NRC"). NRCs are costs incurred by an Incumbent Local Exchange
20 Company ("ILEC"), such as Verizon Virginia, Inc., as a result of providing
21 interconnection, unbundled network elements or resold services to a Competitive
22 Local Exchange Company ("CLEC"). Additionally, I will demonstrate how the
23 ATT/WorldCom NRCM incorporates these assumptions to yield outputs that
24 accurately portray the NRCs Verizon will incur to provide service to CLECs.

1 It has been the experience of both AT&T and WorldCom that the NRCs proposed
2 by ILECs, and specifically by Verizon, are vastly overstated. The most important
3 reasons for the overstatement are faulty assumptions or inaccurate input values
4 relating to network architecture, operations support systems (OSS) capabilities, and
5 excessive manual work times. The NRCM is not only open to public scrutiny, it
6 also is flexible and user friendly.

7
8 **Q. ARE THE OUTPUTS THAT THE ATT/WORLDCOM NRCM PRODUCES**
9 **REASONABLE AND SHOULD THEY BE RELIED ON BY THE**
10 **COMMISSION?**

11
12 **A.** Yes. As explained in detail in this testimony and in the supporting documentation
13 provided with model, the ATT/WorldCom NRCM is a highly sophisticated costing
14 tool capable of calculating the TELRIC costs of UNEs that are properly reflected in
15 non-recurring charges.

16
17 **Q. PLEASE EXPLAIN YOUR EXPERIENCE WITH NON-RECURRING**
18 **COSTS.**

19
20 **A.** During my career with NYNEX, I worked with virtually every department in the
21 service provisioning process while I was part of the Network and Customer Service
22 departments. Both of these departments performed work activities properly
23 characterized, in appropriate circumstances, as non-recurring.

24
25 I have personally been involved with the service ordering and provisioning
26 of residential, business, complex, and special circuits. Some of my activities not
27 only included the management of the workforce responsible for provisioning

1 activities they also included providing advice on service order formats, data
2 structure (USOCs and FIDs), and development of system and service order
3 requirements for new products and services.
4

5 Additionally, I have trained and supervised Mechanized Loop Assignment
6 Center (MLAC) and field assistance personnel in their day-to-day interactions with
7 Central Office (CO) technicians, Installation & Maintenance (I&M) technicians,
8 Special Service Installation & Maintenance (SSIM) technicians, and others, as they
9 connected, disconnected and rearranged equipment and services. This group was
10 responsible for problem resolution including service orders problems, such as
11 missing or incorrectly formatted customer requests and facility problems, including
12 the rearrangement of existing customer lines. In addition, I have supervised receipt
13 of data pertaining to clearance of customer troubles and service order completion
14 data required for billing.
15

16 Also, during my tenure with NYNEX, I was a part of numerous quality field
17 exercises, evaluating technicians as they performed installation and maintenance
18 tasks. The results of exercises were used in conducting root cause analysis for
19 problems and provided the foundation for improving methods and procedures and
20 improving overall service quality.
21

22 While at Bellcore, I was part of several teams that prepared process flow
23 diagrams, depicting steps that technicians took during provisioning of service, both

1 inside the Central Office and in Outside Plant. Those analyses of process flows
2 helped Bellcore's customers understand where savings could be gained through
3 additional training on existing methods and procedures and/or by OSS software
4 enhancements. I have leveraged my work experience at NYNEX and Bellcore into
5 providing non-recurring costs consultation to AT&T and WorldCom.

6
7 As a Technical Consultant to AT&T and WorldCom, I have been
8 responsible for analyzing both recurring and non-recurring cost studies of major
9 Incumbent Local Exchange Carriers such as Verizon, BellSouth, Sprint, GTE. My
10 duties included the preparation of testimony, data requests and responses, and
11 comments on the proper costing and pricing procedures to assist Commissions in
12 their efforts to establish a competitive environment stimulating local service
13 competition. In addition I was a key member of the AT&T/MCI developmental
14 team for the Non-Recurring Cost Model ("NRCM"). I have previously testified
15 before a number of Commissions for AT&T and MCI throughout the United States,
16 where I submitted and defended the AT&T/WorldCom Non Recurring Cost Model.

17
18 **Q. PLEASE DESCRIBE THE ORGANIZATION OF YOUR TESTIMONY.**
19

20 **A.** This testimony is arranged as follows:
21

SECTION I.	Introduction and Background
SECTION II.	Construct of a Well-Designed Non-Recurring Cost Model
SECTION III.	The AT&T/WorldCom Non-Recurring Cost Model
SECTION IV.	Results Generated by the NRCM

SECTION V	Summary
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1
2 Section II begins with a description of non-recurring costs and the general
3 technical assumptions that underlie a study correctly designed to estimate non-
4 recurring costs in accordance with Total Element Long-Run Incremental Cost
5 Methodology (“TELRIC”). I also describe some of the critical assumptions used in
6 the NRCM.

7
8 Section III of my testimony describes the NRCM assumptions and how
9 these assumptions are incorporated into the presentation of NRCs. Section IV
10 provides highlights of the NRCs that are outputs of the model, and Section V
11 summarizes my testimony.

12
13 I adopt and incorporate into my testimony the NRCM and supporting
14 documentation filed with the model in this case on July 2, 2001. The Model
15 Description and User Guide explain how the model works and how to adjust inputs
16 to create different scenarios. The Non-Recurring Cost Model Technical
17 Assumptions Binder (“NTAB”) describes in detail the technical assumptions
18 underlying the various activities presented in the model. Electronic and hard copies
19 of the results of the model run for Virginia were also submitted with the model.

SECTION II: Construct of a Well-Designed Non-Recurring Cost Model

Q. WHAT SHOULD BE INCLUDED IN A WELL-DESIGNED NON-RECURRING COST MODEL?

A. Most important for a well-designed non-recurring cost model are the basic underlying assumptions that guide its development and operation. A non-recurring cost model must reflect the start to finish (*i.e.*, end-to-end) process by which a CLEC requests UNE's from the ILEC, and the ILEC performs activities to fulfill that request. Once the process steps have been identified, each activity within that process needs to be identified as to the proper classification of cost (*i.e.*, recurring and non-recurring). Additionally, each activity must be assigned a probability factor, based on how often that activity will occur.

Q. WHAT ARE THE MAJOR ASSUMPTIONS THAT SHOULD GUIDE THE DEVELOPMENT OF A WELL-DESIGNED NON-RECURRING COST MODEL?

A. A well-designed non-recurring cost model should:

- (1) clearly represent an entire process flow including all the activities necessary to fulfill a CLEC request;
- (2) for each task identified, distinguish recurring one-time activities the costs of which should be recovered through a recurring charge from one-time activities that are properly recovered through a non-recurring charge;
- (3) apply forward-looking economic cost principles such as assuming a reconstructed network engineered using forward-looking

1 technologies and efficient processes;

2 (4) consistent with forward-looking economic costing principles assume
3 efficient, fully integrated operations support systems (OSS) that are
4 accessible to CLECs and that permit CLECs to transact business
5 with the ILEC via electronic interfaces; and

6 (5) maintain consistent network assumptions with those network
7 assumptions used to develop recurring UNE costs.

8
9 **Q. PLEASE DEFINE NON-RECURRING COSTS.**

10
11 **A.** The non-recurring costs that are the object of the study that I will present herein are
12 those required to initiate, change or to disconnect wholesale services,
13 interconnection or unbundled network elements that are ordered by CLECs. A cost
14 is non-recurring if it is incurred for a one-time benefit (exclusive to a particular
15 order) that cannot be reused for subsequent orders.

16
17 The distinction between non-recurring and recurring costs can be confusing
18 and requires careful analysis of the associated UNE activities before they can be
19 categorized as a recurring or non-recurring cost. *The non-recurring cost model*
20 *must take into consideration whether the benefits derived from an activity can be*
21 *shared by multiple users over time or whether the activity provides a benefit only*
22 *to the CLEC placing the request.* This distinction is extremely important when
23 modeling non-recurring costs. Costs associated with benefits shared by multiple
24 users over time should be treated as recurring so that they are not inappropriately
25 assigned to the first customer to place the request or use the function while others

1 that obtain use of the same function later on incur no cost. In contrast, there are
2 costs associated with activities that occur as a result of a request from a CLEC for
3 interconnection and cannot be reused to serve a subsequent CLEC. Such costs
4 generally are properly treated as non-recurring costs.

5
6 Yet, not all one-time activities that happen in conjunction with a CLEC
7 request for UNEs or interconnection are considered non-recurring cost. For
8 example, in real world telephony a request for interconnection may necessitate the
9 placement of cables, terminals, and or drop wires to fulfill the request. Although
10 the placement of cables, terminals or drop wires happens only once, these activities
11 are attributed to the construction costs necessary to create a UNE loop that, over
12 time, can be used by multiple carriers (and end users). Therefore, such activities
13 should correctly be included in the calculation of the recurring rate for that element.

14
15 The estimation of UNE recurring charges is based in large part on the one-
16 time cost of installing the physical plant. These one-time expenses are properly
17 amortized and recovered through a recurring charge because the physical plant will
18 continue to be used over time, and may well benefit many different users over time.
19 In contrast, non-recurring charges are only appropriate to recover one-time
20 expenses that benefit a particular CLEC and cannot in the future be used by Verizon
21 or another CLEC.

1 **Q. WHY IS IT IMPORTANT TO PROPERLY CHARACTERIZE**
2 **RECURRING AND NON-RECURRING COSTS?**

3
4 **A.** Ms. Murray explains (in her testimony) the economic and competitive importance
5 of proper identification of recurring and non-recurring costs. In addition, I note that
6 if all the forward-looking costs of a one-time activity benefiting multiple users are
7 borne by the first telecommunications provider to use the facility, then obviously
8 the first user will be forced to pay more than its fair share.

9
10 **Q. WHAT TYPES OF COSTS COULD BE MISTAKEN FOR, BUT SHOULD**
11 **NOT BE TREATED AS NRCs?**

12
13 **A.** The following are examples of some “one-time” recurring costs that have no place
14 in a correct NRC model:

15

16 • **Capital costs:** These costs, including related labor and administrative costs,
17 are incurred to provision facilities that can be used to provide service to
18 multiple (both current and future) customers. For example, an ILEC would
19 incur the costs of installing a telephone pole only one time. However, these
20 costs are currently and properly recovered in the recurring rates because they
21 are capital costs and because the pole can and will be used for the benefit of
22 many current and future consumers.

23 • **Capital assets such as OSS, computers, outside plant or plug-in cards:**
24 These assets should be classified as recurring costs and the installation costs
25 should be recovered over the economic life of the asset through recurring rates
26 of the services(s) using the asset. For example, a local digital switch is a
27 capital asset that is installed one time. The labor used to install it is also

1 capitalized along with the switch and the full cost is properly recovered in
2 recurring rates, not in non-recurring charges.

3 • **Other activity costs that benefit multiple or future customers:** For
4 instance, the data in the ILEC's OSS (i.e., network inventory, facility
5 locations, etc.) provide a benefit to all users of the network, so the cost of
6 compiling that data should be recovered in recurring rates, even though the
7 data is compiled once.

8 • **Maintenance of the network.** The Maintenance Expense account of the
9 recurring rates is established to recover the cost of maintaining the network.
10 It includes such things as the manual labor expense of the technicians and
11 associated administrative labor for those who "fix the problems" associated
12 with maintaining the network. These are ongoing costs incurred in order to
13 keep the network functioning over time.

14

15 **Q. WHAT TYPES OF COSTS ARE PROPERLY CATEGORIZED AS NRCs?**

16

17 **A.** Non-recurring charges should only be assessed for those efficient activities
18 associated with the pre-ordering, ordering and provisioning processes that can
19 benefit *exclusively* the customer placing the order (i.e., the CLEC).

20

21 **Q. PLEASE DEFINE THE TERMS PRE-ORDERING, ORDERING AND**
22 **PROVISIONING.**

23

24 **A.** Pre-ordering is the process by which a CLEC interfaces with customers to
25 determine customer needs. This information, such as customer premise address,
26 phone number availability, feature availability and service availability, is

1 accessible, in real time, to CLECs via electronic interfaces to the ILEC's OSS so
2 that CLECs may be able to accurately respond to customers when taking service
3 and feature orders.

4
5 Ordering is the process by which a CLEC electronically submits a Local
6 Service Request ("LSR") to an ILEC via an electronic gateway. Ordering is
7 complete when the ILEC responds electronically with a positive confirmation of
8 order acceptance.

9
10 Provisioning is the process by which an ILEC, after receipt of an LSR,
11 performs all the necessary functions to provide the service, interconnection, or
12 Unbundled Network Elements ("UNE") requested by a CLEC.

13
14 **Q. AFTER PROPERLY CATEGORIZING ACTIVITIES AS EITHER**
15 **RECURRING OR NON-RECURRING, WHAT OTHER ASSUMPTIONS DO**
16 **YOU RECOMMEND FOR ESTABLISHING NON-RECURRING RATES?**

17
18 **A.** The network architecture used for modeling NRCs should represent the same fully
19 deployed forward-looking network element technologies that were used within the
20 recurring cost model. "Forward-looking technologies" refers to technologies that
21 are the most efficient, least cost technologies available in the marketplace today.
22 To reflect forward-looking economic costs, a non-recurring cost model should
23 recognize and consider forward-looking network architecture such as intelligent,
24 processor-controlled network elements. Additionally, to the greatest extent
25 possible, a non-recurring cost model must reflect the efficient use of automatic and
26 mechanized processes, which are inherent within the ILEC's OSS, and which can

1 be used in competitive markets to minimize costly human intervention. For
2 example, the study should assume an OSS network built to reflect the
3 communication of electronic messages over standard interfaces in such a manner
4 that there is little or no manual intervention for provisioning of CLEC UNE
5 requests.

6
7 **Q. WHAT ARE OPERATIONAL SUPPORT SYSTEMS?**

8 **A.** Operational Support Systems, or OSS, are the electronic, software driven computer
9 programs and databases that telephone companies use to manage the pre-ordering,
10 ordering, provisioning, repair, maintenance and billing processes for both their
11 retail and wholesale operations.

12
13 **Q. WHAT ARE THE MAJOR OSS ASSUMPTIONS THAT ARE CRITICAL**
14 **TO THE DEVELOPMENT OF A NON-RECURRING COST MODEL?**

15
16 **A.** The major OSS assumptions that are critical to the development of a non-recurring
17 cost model are:

- 18 1) There must be efficient electronic flow-through of messages
19 between the ILEC and the CLEC. These messages are used in the
20 pre-ordering and ordering phase of a service or UNE activation
21 without which there would be mass confusion, particularly in an
22 environment with several CLECs purchasing wholesale services.
23 2) There should be accurate exchange of information between the
24 CLEC and the ILEC in a format that is electronically readable and
25 that can be processed by the OSS. Likewise the information that

1 the ILEC passes back to the CLEC should contain the same level
2 of accuracy.

3 3) The ILEC's OSS should have the ability to electronically reject
4 incorrectly formatted messages back to the CLEC for their
5 correction without manual intervention or a fall-out.

6 4) With regard to service order fallout, the study should assume that a
7 minimal level (if any) of manual resolution or reformatting of
8 customer (CLEC) requests are necessary. (Moreover, Verizon
9 should have a significant burden of proof to demonstrate why it
10 cannot mechanically process CLEC orders.)

11 Each of these assumptions are typical of forward-looking and efficient
12 operations of practically any large business operation and should certainly be
13 expected of (and attainable by) businesses the size of the ILECs.

14
15 **Q. WHAT IS "FALLOUT" AND WHY IS IT SIGNIFICANT?**

16
17 **A.** "Fallout" refers to conditions of the OSS that prohibit the electronic flow-through
18 of an inquiry or an order. As noted, most of an ILEC's OSS are electronically
19 linked and are dependent on one another. Inevitably, some errors can and do occur,
20 even in processes that are highly automated.¹ When errors occur, manual
21 intervention is required. For example, if the OSS electronically receives erroneous

¹ As Ms. Murray explains, however, the presumption should be that an efficient process will be sufficiently automated to eliminate all but a small residual of fallout that requires manual intervention.

1 or incompatible information from another OSS, the order will be designated as
2 “fallout” and may require manual intervention.

3
4 Fallout is significant, especially at high levels, because in many instances, it
5 is the only cost driver for an otherwise seamless electronic flow-through process.

6 **Q. CAN YOU EXPLAIN THE DIFFERENT TYPES OF FALLOUT AND**
7 **THEIR EFFECT ON NON-RECURRING RATES?**

8
9 **A.** There are four major categories of electronic fallout. They are:

- 10 1. Database synchronization errors;
- 11 2. Network element denial;
- 12 3. Communication errors; and
- 13 4. Synchronization errors.

14
15 Database synchronization errors occur when databases that should contain
16 identical data do not match, or they disagree as to the availability or status of a
17 needed resource. As an example, a typical database synchronization error may
18 occur when an address that exists in one database is not duplicated appropriately in
19 other databases.

20
21 This kind of synchronization error will stop processing. ILEC technicians
22 must then investigate, and correct the database that is “out of sync.” The
23 correction process starts with a request for manual attention (“RMA”). The
24 resolution of this RMA is largely a maintenance task because one or more of the
25 databases will need to be updated (i.e., synchronization). Therefore, the associated

1 labor cost should be classified as Maintenance Expense (recovered through
2 recurring rates) and should not be defined or assessed as a NRC. The simple
3 reasons why the labor cost classification should be treated as a recurring cost are:
4 (1) the benefit produced by the database update or synchronization will benefit all
5 who use that data including the ILEC; and (2) the CLEC did not cause the data to
6 become “out-of-sync.” In other words, the cost should be borne by all users of this
7 data.

8
9 Network element denial is a second type of fallout. It can happen when an
10 Intelligent Network Element (INE), such as a Local Digital Switch, responds that it
11 cannot perform a task requested by another component of the network. For
12 example, the element management system might expect that a certain version of
13 software is available to activate certain features, when in reality the installation of
14 this software has not yet been performed.

15
16 Again, RMA resolution and the cost recovery should be treated the same as
17 synchronization errors. An accurate representation of available network features
18 needs to be a part of the ILEC's Pre-ordering and Ordering processes. If a CLEC
19 orders a particular feature that is actually unavailable due to the catalog of products
20 and features being not updated to reflect the availability of the network (and thus
21 the reason for the network denial), the order needs to be returned back to the
22 originator for correction. In many cases, the OSS should recognize the
23 inconsistency of the features offered within the network and electronically return

1 the request back to the originator without the need for manual assistance or
2 intervention. As with synchronization errors these inconsistencies are preexisting
3 in the ILEC's databases and hence cannot be considered to be caused by a CLEC
4 order. Correcting such inconsistencies is again properly considered part of
5 recurring network maintenance.

6
7 Communication errors are the third type of fallout. Communication errors
8 represent the failure of the communication links between OSS, the Element
9 Management Systems ("EMS"), or the INE. These errors take place because a valid
10 communication path cannot be found between the elements. RMA resolution for
11 these types of errors involves correcting (or fixing) the communications links
12 between the systems, and restarting the flow-through processing where it had
13 stopped. Here again, the CLEC did not cause the communications paths to fail and
14 therefore the resolution and cost recovery is purely a Maintenance Expense.

15
16 Synchronization (protocol) errors are the fourth type of fallout. They occur
17 when two separate components (OSS to OSS or OSS to EMS and INE) attempt to
18 communicate, but fail to establish the necessary communications protocols, despite
19 the existence of a functioning link. Here again the CLEC did not cause the
20 communications protocols to fail and therefore the resolution and cost recovery is
21 purely a Maintenance Expense.

22

1 **Q. CAN YOU OFFER ANY CONCLUSIONS BASED ON THIS**
2 **INVESTIGATION OF FALLOUT?**

3
4 **A.**Yes. Because most fallout errors are not caused by the CLECs, resolution and cost
5 recovery of those database or network problems are properly characterized and
6 recovered as recurring Maintenance Expense.

7
8 **Q. IS THERE ANY INSTANCE WHEN FALLOUT IS APPROPRIATELY**
9 **CONSIDERED TO GENERATE NRCS?**

10
11 **A.**Yes. In the unlikely event that the CLEC is directly responsible for the
12 provisioning process stoppage, the resolution effort should be treated as an NRC.
13 For example, if the CLEC requests the ILEC to connect its facilities to non-existent
14 CLEC equipment (i.e., the CFA), the manual time required by the ILEC to resolve
15 this problem should be considered a NRC. In some instances, the OSS should be
16 able to recognize the error condition and produce a "RMA" that automatically is
17 returned to the CLEC. In other instances the RMA will require research and
18 resolution and may then involve a technician who will manually create a reject
19 message that is sent back to the CLEC indicating the facility unavailability. The
20 cost associated with research and resolution would properly be treated as a NRC.

21

22 The key point, worthy of note, is that fall-out due to the processing of
23 service requests, is not always attributable to the CLEC. Further, when resolution
24 of the fallout provides a benefit to the ILEC as well as to the CLEC, the costs
25 should be categorized as recurring costs. As an example, if the CLEC's request is
26 for an address that doesn't exist in the system, and the ILEC has to ***add*** the address
27 to its database in order for the processing to continue, then the process of updating

1 the database with the new address should be considered a recurring cost. The ILEC
2 will be able to use that database information to service its own customers as well as
3 other CLECs that query the database after the first CLEC. The updating process is
4 considered database maintenance and recovered in the recurring rates. Another
5 example is when the CLEC request falls-out for “unable to assign facilities.” Here
6 too, the MLAC technician may resolve the RMA by the manual assignment of
7 facilities by either the technician or the engineering department. The underlying
8 cause of the RMA was the ILEC’s lack of inventory, and was not caused by the
9 CLEC. The CLEC’s request only brought to light the facility shortage. So again,
10 the resolution is considered a database maintenance activity², and should be
11 considered a recurring cost activity. It is with this understanding that the authors of
12 the NRCM decided the appropriate fallout rate attributable to the CLEC should be
13 conservatively set at two percent (2%).

14
15 **Q. WHAT HAS BEEN NOTED IN OTHER JURISDICTIONS WHERE THE**
16 **ISSUE OF VERIZON’S PROPOSED FALLOUT RATE HAS BEEN**
17 **ADDRESSED?**

18
19 **A.** In the Massachusetts Consolidated Arbitrations Docket, the Department reviewed
20 Verizon’s non-recurring cost study and found that Verizon assumed too high a level
21 of fallout for service ordering processing. In the Department’s words:

22
23 The CLECs are sophisticated telecommunications carriers, who
24 have every commercial interest in presenting service order
25 information to Bell Atlantic electronically on a schedule, in a

² In order to make the assignment manually the technician will have to update the database with new or rearranged facilities. Therefore, the cost for maintaining the data reflected by the actual network is a recurring cost activity.

1 format, and with such accuracy designed to achieve the highest
2 possible level of flow-through....
3

4 We conclude that Bell Atlantic has not met its burden of proof that
5 the 15 percent fallout rate assumed in its NRC model is an
6 appropriate reflection of forward-looking technology that will be in
7 place to process service orders. We conclude that the CLECs have
8 presented substantial evidence in support of a lower fallout rate in
9 this industry, basing their analysis on a description of the
10 appropriate use of forwarding-looking technologies. Their
11 conclusions, too, are given credibility by their reference to
12 comparable systems in other industries. We therefore conclude
13 that the two percent fallout rate offered by the CLECs is indicative
14 of likely experience with forward-looking technologies in this
15 industry.³

16
17 **Q. YOU MENTION THE IMPORTANCE OF KEEPING THE RECURRING**
18 **AND NON-RECURRING NETWORK CONSTRUCTS IDENTICAL FOR**
19 **COSTING PURPOSES. HOW WOULD A DIFFERENCE IN NETWORK**
20 **MODELS PRODUCE INCONSISTENCIES IN LOOP NRC RATES?**
21

22 **A.** The assumptions regarding network construct should be the same whether or not the
23 model used is the recurring or non-recurring cost model. If the network constructs
24 are not the same, the NRCs will not reflect the proper activities to interconnect to
25 that network. In other words, it would be an apples to oranges comparison. This
26 point was recognized in the Massachusetts Consolidated Arbitrations Docket, where
27 the Department expressly rejected the use of inconsistent network assumptions, and
28 made clear that UNE recurring rates and NRCs must be based on the same network
29 assumptions.⁴
30

³ Consolidated Arbitrations Docket, D.P.U./D.T.E. 96-73/74, 96-75, 96-80/81, 96-83, 96-94, Phase 4-L Order at 11-16 (Oct. 14, 1999).

⁴ Consolidated Arbitrations Docket, D.P.U./D.T.E. 96-73/74, 96-75, 96-80/81, 96-83, 96-94, Phase 4-L Order at 16-19 (Oct. 14, 1999), Phase 4-O Order at 11-12 (Jan. 10, 2000).

1 **Q. WHAT OTHER NETWORK ASSUMPTIONS ARE IMPORTANT WHEN**
2 **DETERMINING APPROPRIATE NRCs?**

3
4 **A.**An extremely important issue is the assumption of what constitutes the local loop
5 and whether field installation activities should be considered as a non-recurring cost
6 item.

7
8 In various cost dockets Verizon has presented Field Installation activities as
9 part of what is necessary *sometimes* to fulfill a CLEC's request, and assigns Field
10 Installation NRC's to the CLEC. The Field Installation activities amount to work
11 along the transmission facility between the network interface device ("NID") and
12 the central office and may represent connecting the feeder cables to the distribution
13 cables (*e.g.* the field cross-connect at the serving area interface ("SAI")). However,
14 Verizon is wrong for assuming these activities are proper NRC activities for the
15 following reasons.

16
17 The loop element, as typically and appropriately analyzed in UNE recurring
18 cost analyses, represents a complete transmission facility between the NID and the
19 central office.⁵ As such, it includes all features, functions, capabilities *and*

⁵ FCC Rule 47 C.F.R. § 319(a) defines the unbundling requirement for the "local loop" network element as follows:

(a) **Local Loop and Subloop.** An incumbent LEC shall provide nondiscriminatory access, in accordance with § 51.311 and section 251(c)(3) of the Act, to the local loop and subloop, including inside wiring owned by the incumbent LEC, on an un-bundled basis to any requesting telecommunications carrier for the provision of a telecommunications service.

(1) **Local Loop.** The local loop network element is defined as a transmission facility between a distribution frame (or its equivalent) in an incumbent LEC central office and the loop demarcation point at an end-user customer premises, including inside wire owned by the incumbent LEC. The local loop network element includes all features, functions, and

1 *connections* of such a transmission facility. The forward-looking economic
2 recurring cost of the local loop (reflected by the recurring monthly rate consumers
3 pay for the use of that loop) includes all of the costs associated with the
4 construction and maintenance of the loop including the necessary cross connections
5 to complete the transmission path. In other words, the UNE loop recurring cost is
6 the cost associated with building and maintaining the transmission facility and is
7 not the cost of laying feeder cable somewhere near distribution cable (to be
8 connected at some later date). Thus, it must necessarily include the cost of this field
9 cross-connect, because without the cross-connect, the loop will not work.

10
11 The ILEC's TELRIC recurring "local loop" network represents the capacity
12 needed for their own requirements and any additional capacity needed by the
13 CLEC's. This capacity has to include the cost for such a connection between the
14 distribution and the feeder, which is therefore already built into the recurring cost of
15 each loop.

capabilities of such transmission facility. Those features, functions, and capabilities include, but are not limited to, dark fiber, attached electronics (except those electronics used for the provision of advanced services, such as Digital Subscriber Line Access Multiplexers), and line conditioning. The local loop includes, but is not limited to, DS1, DS3, fiber, and other high capacity loops.

- (2) **Subloop.** The subloop network element is defined as any portion of the loop that is technically feasible to access at terminals in the incumbent LEC's outside plant, including inside wire. An accessible terminal is any point on the loop where technicians can access the wire or fiber within the cable without removing a splice case to reach the wire or fiber within. Such points may include, but are not limited to, the pole or pedestal, the network interface device, the minimum point of entry, the single point of interconnection, the main distribution frame, the remote terminal, and the feeder/distribution interface.

1 In other cost dockets, Verizon has posited the requirement for this “field cross-
2 connection” and stated that they make every effort to leave this connection in place
3 when the customer disconnects⁶ their service. Verizon has proposed imposing a
4 non-recurring cost for placement of a new cross-wire whenever a cross-wire has not
5 been placed previously and a new cross-wire therefore needs to be added.
6 However, there is no charge if the cross-connect exists. The fundamental
7 conceptual problem with this is that the first user of the loop facility pays the full
8 cost to add this cross-connect (to make it a functional transmission facility), while
9 the next user of that same facility pays nothing. This is improper because it applies
10 a cost that benefits multiple users over time, but saddles only one customer with the
11 relevant costs. The cost of installing equipment that successive carriers can use
12 should be recovered as part of the recurring UNE rates, and not through a one-time
13 non-recurring charge.

14
15 The recurring rate allows for cost recovery from all who benefit from those
16 facilities. Therefore, like the labor cost associated with the placement of poles,
17 cables, terminals, etc, and the labor associated with splicing of cables, the
18 placement of the field cross-connect also should be included in the recurring rates.
19 This activity consists of nothing more than the splicing of the distribution cables to

⁶ Local access lines are created by placing short metallic jumpers in the FDI between the assigned sub-feeder termination (F1) and the assigned distribution pair termination (F2). It is general practice to leave these jumpers in place when lines disconnect. If the F1/F2 combination served the primary line to a business or residence, every effort will be made to reuse it for the next customer at that location. For additional lines the combination is broken as necessary to meet demand.

1 the feeder cables. Regardless of when this activity actually takes place, its
2 classification is a recurring cost activity.

3
4 In the practice of fulfilling service requests, the ILEC may identify a need to
5 re-arrange the existing network to meet service demand. Often the work activity
6 will involve movement of SAI field cross-connects to different facilities. This is
7 done because there may be a new service requirement where service was not
8 established before. In some instances, the ILEC may even re-arrange entire sections
9 of cables to meet new demand requirements. This re-arrangement splicing activity
10 would be reflected in maintenance expenses of recurring rates. Likewise, the re-
11 arrangement of a single SAI field cross-connect to meet demand is the same type of
12 activity, and should be treated as a recurring cost activity.

13
14 The most important point regarding proposed Field Installation NRC's is
15 that the product of the Field Installation activity must only benefit the CLEC
16 request. *If the Field Installation activity provides future benefit to the CLEC, then*
17 *that activity should be considered a recurring cost activity and the costs recovered*
18 *through the recurring rates.*⁷

⁷ The FCC has found that recovering a recurring cost as a non-recurring cost to be unjust. We find that recovering a recurring cost through a non-recurring charge would be unjust and unreasonable because it is unlikely that incumbent LECs will be able to calculate properly the present value of recurring costs....

Accordingly, we find that imposing non-recurring charges for recurring costs could pose a barrier to entry because these charges may be excessive, reflecting costs that may (1) not actually occur; (2) be incurred later than predicted; (3) not be incurred for as long as predicted; (4) be incurred at a level that is lower than predicted; (5) be incurred less frequently than predicted; and (6) be discounted to the present using a cost of capital that is

1 **Q. SHOULD THE LINE CONDITIONING NRCs ASSOCIATED WITH**
2 **ADVANCED SERVICES BE INCLUDED IN THE NRCM?**

3
4 **A.** Line conditioning refers to activities that may be needed to make a copper loop
5 DSL compatible. A properly reconstructed forward-looking network, as suggested
6 by the TELRIC pricing guidelines,⁸ would include this requirement. Therefore, the
7 forward-looking design of the recurring network, if engineered using the most
8 efficient technology for reasonably foreseeable capacity requirements, would not
9 include load coils and would have minimal bridge taps. The non-recurring costs in
10 this case should reflect forward-looking economic costs.⁹ A forward-looking
11 network construct would not require removal or conditioning of facilities, and
12 therefore line conditioning should not be included in a UNE NRC model.

13

14 Moreover, not only is line conditioning not forward-looking, it is not
15 properly a non-recurring cost at all. In all cases facilities, once conditioned,
16 become available to all users of that network, including the ILEC and, therefore, the

too low.

See Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, First Report and Order, CC Docket 96-98, 11 FCC Rcd 15499, at ¶ 746-7 (1996) (“*Local Competition Order*”).

⁸ *See* First Report and Order at ¶ 685:

... We, therefore, conclude that the forward-looking pricing methodology for interconnection and unbundled network elements should be based on costs that assume that wire centers will be placed at the incumbent LEC's current wire center locations, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable capacity requirements.

⁹ *See, e.g., In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934, as amended, to Provide In-Region, InterLATA Services in Michigan*, CC Docket No. 97-137, Memorandum Opinion and Order No. FCC 97-298 (Aug. 19, 1997), ¶ 296.

1 cost of conditioning is a recurring cost. All in all line conditioning activities are
2 network maintenance activities necessary to support the elements that require them.

3
4 As stated previously the local loop network element includes all features,
5 functions, and capabilities of such transmission facilities. Those features, functions,
6 and capabilities include the ability to deliver DSL services. Line conditioning
7 additional facilities is merely a maintenance activity necessary to meet service
8 demands. As such, the conditioning cost activities should be reflected in the
9 maintenance expense included in recurring costs.

10

SECTION III: The AT&T / WorldCom Non-Recurring Cost Model (NRCM)

Q. DOES THE AT&T/WORLDCOM NON-RECURRING COST MODEL INCORPORATE THE ASSUMPTIONS THAT YOU DISCUSS ABOVE?

A. The AT&T/WorldCom NRCM incorporates all the assumptions identified and explained in Section II of my testimony. The model properly reflects: (1) a network engineered using forward-looking technologies and efficient processes; (2) an electronic ordering interface between CLEC and ILEC that incorporates front-end edits to minimize service order errors and the ability for those errors to be returned electronically; (3) an efficient OSS environment with unpolluted databases to minimize fallout; (4) electronic provisioning where possible; and (5) proper identification of recurring and non-recurring costs such as the recovery of OSS investment costs in recurring rates.

Q. PLEASE EXPLAIN HOW THE NRCM MODEL WORKS.

A. The NRCM develops cost estimates for the different non-recurring functions by identifying and estimating the associated costs of each activity that will be performed by an ILEC when a CLEC requests a wholesale service, interconnection, and/or an unbundled network element. By identifying and estimating costs associated with each activity, the NRCM develops a “bottoms-up” estimate of non-recurring costs. The methodology is very simple. First, all activities required to complete a Local Service Request (“LSR”) are identified and listed. Second, for each activity, an estimate is provided of the amount of time (in minutes) required to perform each activity. As explained earlier, most non-recurring activities are accomplished electronically for which no time is captured. Third, once the time has

1 been determined, the wage rate associated with the type of labor required for the
2 specific activity is determined and the labor cost is calculated. The model is
3 constructed to take into consideration the probability of an activity occurring. Not
4 all activities identified occur in all instances. For example, some activities required
5 for unbundled copper loops are not required for unbundled fiber loops.

6
7 Fourth, the NRC Model calculates the cost of each of the activities
8 comprising a NRC Element Type using the following formula:

9
10 Activity Cost = $\frac{\text{Activity Probability} \times \text{Time (minutes)} \times \text{Rate (\$/hour)}}{60}$
11

12 Finally, the model adds up the costs of the activities for each element type
13 and then applies a variable overhead factor to calculate the total costs. This input
14 represents the loading variable overhead expenses not already captured in the
15 model. As mentioned earlier, the model inputs are user-adjustable to reflect a
16 specific state's characteristics and/or values specified by state regulatory
17 commission. The overhead factor for Virginia is eight percent 8%; the same factor
18 was calculated and used in the recurring cost model.

19
20 **Q. USING THE MODEL, HOW ARE THE TIME INCREMENTS REQUIRED**
21 **FOR EACH ACTIVITY AND THE PROBABILITIES OF A PARTICULAR**
22 **ACTIVITY DETERMINED?**

23
24 **A.** The work times and probabilities for each particular activity were determined by the
25 consensus of a panel of experts within the telecom industry as explained in the

1 NTAB (the Non-recurring Cost Model Technical Assumptions Binder)
2 documentation submitted on July 2, 2001.

3
4 **Q. WHAT TYPES OF SERVICE REQUESTS DOES THE NRCM STUDY?**

5
6 **A.** The model currently calculates pre-ordering, ordering, provisioning and
7 disconnecting non-recurring costs for 49 Network Element types. The order types
8 represented are: New installation, Disconnect, and Migration. Some UNE examples
9 are: UNE-Loop for POTS/ISDN BRI service; 4 Wire UNE Loop; and DS1 and
10 DS3 Interoffice Transport. Section 28 of the NTAB provides a complete list and
11 detailed description of each element type.

12
13 **Q. PLEASE EXPLAIN THE TERMS “MIGRATION”, “INSTALLATION”,**
14 **AND “DISCONNECT”.**

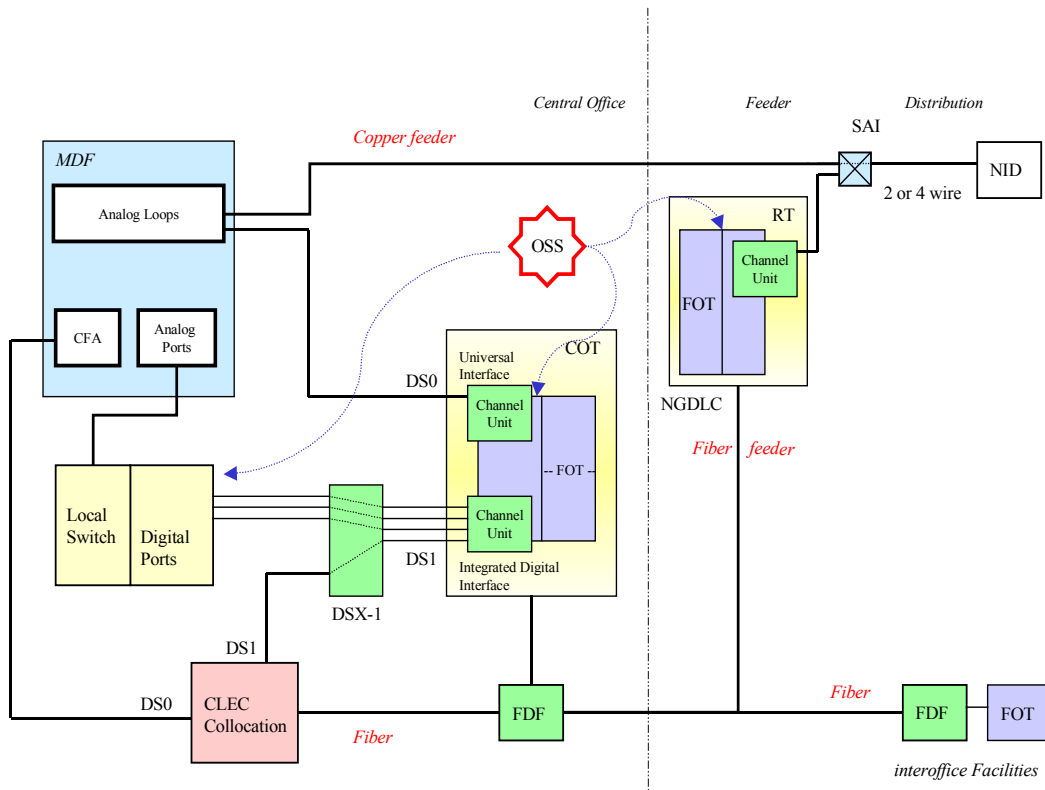
15
16 **A.** “Migration” occurs when the CLEC requests the existing services and/or facilities
17 for a customer of the ILEC to be moved to the CLEC. “Installation” occurs when
18 the incumbent establishes any new or additional service for a CLEC customer.
19 “Disconnect,” occurs when the CLEC requests that the ILEC no longer provide a
20 service or unbundled network element.

21
22 **Q. PLEASE DESCRIBE THE NETWORK TECHNOLOGY ASSUMED IN THE**
23 **AT&T/WORLDCOM NRCM?**

24
25 **A.** The NRCM assumes forward-looking efficient network architecture, as required by
26 the forward-looking economic cost methodology. This approach assumes a
27 network supports all of the services that the incumbent local exchange carrier
28 provides, if it were to completely reconstruct its network in order to provide all of

those services at least cost. Within that architecture, the incumbent would install various network components, which would reflect the technology able to provide services at least cost.

NRCM Conceptual Network



The NRCM is designed to produce costs associated with both analog and digital loops melded together. The cost produced reflects the mix of the network in its entirety. The model calculates NRC's based on the economic mix of copper and fiber feeder.

1 For interconnection to the switch, the model also considers both analog and
2 digital ports. To interconnect to the analog port, a manual cross-wire must to be
3 placed at the MDF. Like the digital loop, the digital port can be interconnected
4 electronically to the CLEC's DS1.

5
6 The model also considers forward-looking network elements such as Fiber
7 SONET rings, Digital cross-connects such as the DCS/EDSX , ADTS (Automatic
8 Digital Terminal System), Local Digital Switches (LDS), Low Profile Frames, DSX
9 (for channelized loops), and Gateways that allow the CLEC to connect with the
10 ILEC's OSS.

11
12 **Q. CAN YOU FURTHER EXPLAIN THE DIFFERENCE BETWEEN ANALOG**
13 **AND DIGITAL LOOPS?**

14
15 **A.**An analog loop will have a physical appearance on the MDF, whereas the digital
16 loop will not. The analog loop will require a manual cross connect to be placed to
17 interconnect it to the CLEC as an unbundled loop.

18
19 The digital loop will enter the central office on electronics as a DS0 channel
20 riding within a DS1. To interconnect it to the CLEC's network, an electronic cross-
21 connect is made by the ILEC's OSS. It has no appearance on the MDF. Therefore
22 ,the NRCs involved with provisioning a digital UNE-Loop are distinctly different
23 from those of an analog loop.

1 **Q. DOES THE MODEL INCORPORATE ANY FALLOUT IN THE NRC COST**
2 **ESTIMATES?**

3
4 **A.** Yes. The model incorporates fallout at the rate of two percent (2%). For each
5 element, the NRCM assumes an efficient level of fallout that would be directly
6 attributable to the CLEC. The time and costs associated with the manual activities
7 necessary to resolve this fallout are included in the cost of completing the related
8 local service request.

9
10 **Q. WHAT IS THE BASIS FOR THE TWO PERCENT (2%) FALLOUT RATE?**
11

12 **A.** As explained earlier in my testimony, most fallout resolution by the ILECs results
13 in corrections to their own systems and databases and these corrections are properly
14 characterized as recurring Maintenance Expenses not as non-recurring costs. It was
15 the consensus of the experts involved in development of the NRCM that existing
16 OSS, when operated and maintained efficiently, would experience CLEC caused
17 fallout rates of two percent (2%).

18
19 The NRCM does not consider any fallout in the service-ordering phase of
20 CLEC request processing. The authors believe the forward-looking OSS will
21 identify incorrectly formatted requests, and return them electronically back to the
22 CLEC to be fixed. In past cost dockets, we have asked ILECs (including Verizon)
23 to produce examples of orders that they would have to manually process in the
24 service-ordering phase. In reply they have responded with conditions that reflected
25 thresholds set by them as a reason for the manual resolution. For example Verizon
26 responded that service request with more than nine loops on a single request would

1 require an investigation by them to see if enough facilities existed. This threshold
2 has nothing to do with the OSS processing the request. The manual processing by
3 Verizon workforce is to insure they can fulfill the request or to notify with advance
4 warning downstream departments that such a request is coming. It is
5 AT&T/WorldCom's position that in real world telephony, field checks to ensure
6 that facilities exist to meet the demand will occur. However, the cost to provide that
7 demand is a recurring cost as apposed to a non-recurring cost. The ongoing
8 engineering of the network to meet its demand is an operational cost associated
9 with the elements that the network produces. Here again, as I have previously
10 explained, the fallout is not caused by the CLEC, and any resolution should not be
11 considered a non-recurring cost.

12
13 **Q. WHAT NETWORK ARCHECTURES ARE ASSUMED IN THE MODEL**
14 **FOR PURPOSES OF DETERMINING THE APPROPRIATE NRC COSTS?**

15
16 **A.** As I discussed earlier, forward-looking technologies should be used. Specifically,
17 the NRCM is based on the use of Local Digital Switches (LDS), GR-303 Integrated
18 Digital Loop Carrier (IDLC) for loops served by a fiber feeder, Digital Cross-
19 Connect Systems (DCS), and Synchronous Optical Network ("SONET") rings for
20 transport. These technologies use intelligent processor controlled network elements
21 that can communicate over standard interfaces to the OSS in such a manner that
22 little or no human intervention is required for provisioning and maintenance
23 activities. The main distributing frame ("MDF") is a low profile, punch down
24 block for terminating copper loops in the central office.

1 The model assumes the ILEC will proactively maintain its network by
2 performing basic network maintenance to ensure that it provides only high quality
3 products and services to the CLEC. In addition, some NRC scenarios incorporate
4 costs for pre-service testing such as a 1000 Hz. test for a 4-wire circuit to ensure
5 that the service is performing optimally before it is released to the CLEC.
6 Additional technical assumptions may be found in the NTAB as each element is
7 described in detail.

8
9 **Q. CAN YOU SUMMARIZE THE UNDERLYING PRINCIPLES OF A**
10 **PROPERLY DEVELOPED NRCM?**

11
12 **A.** In order for a competitive environment to exist, new entrants must have non-
13 discriminatory access to the incumbent's databases and other resources for entering
14 service orders to eliminate the need for costly, intermediate customer service
15 contacts. Also, new entrants must only incur costs equal to those which the ILEC
16 would incur using a forward looking network architecture and efficient OSS, or the
17 CLEC will be burdened with a barrier to market entry and the ILEC will have no
18 incentive to operate efficiently. Finally, NRCs must be based upon forward-
19 looking economic cost principles and each task that the ILEC claims as a NRC must
20 benefit only the CLEC's request.

21
22 **Q. DOES THE NRCM PROPOSED BY AT&T AND WORLDCOM**
23 **INCORPORATE THOSE PRINCIPLES?**

24 **A.** Yes. The NRCM reflects those requirements, as follows:
25 1. The prices produced by the NRCM represent the entire process necessary to
26 activate, change or disconnect a request to interconnect with the ILEC. Its

1 focus is on the efficient *individual steps* necessary to fulfill the request and is
2 not focused on departmental functionality.

- 3 2. The NRCM is consistent with forward-looking economic cost principles. Only
4 true non-recurring cost activities are accounted for in the NRCM.
- 5 3. The prices produced by the NRCM are consistent with the same network model
6 assumed for determining recurring rates.
- 7 4. The NRCM incorporates the efficiencies of automated OSS that provide for
8 maximum electronic flow through of orders. To the extent fallout occurs, it is
9 limited to approximately two percent (2%) of the total orders processed.
- 10 5. Manual work times reflect appropriate intervals based on the use of forward-
11 looking network technologies.
- 12 6. The NRCM incorporates the efficiencies of automated Intelligent Network
13 Elements (SONET, GR-303/IDLC, DCS/EDSX, LDS, etc.) that provide for
14 maximum electronic flow through for provisioning of orders.
- 15 7. Installation and disconnection costs are calculated separately.

16
17 **SECTION IV: Recommendations Regarding NRCs**

18 **Q. BASED ON YOUR EXTENSIVE EXPERIENCE WITH NON-RECURRING**
19 **ACTIVITIES, COSTS AND CHARGES, WHAT DO YOU RECOMMEND**
20 **THAT THE COMMISSION SHOULD DO TO SET NEW NON-**
21 **RECURRING CHARGES FOR THE PROVISIONING OF UNEs IN**
22 **VIRGINIA?**

23
24 **A.** I recommend that the FCC adopt the AT&T/WorldCom Non-Recurring Cost
25 Model. It properly translates the forward-looking economic cost methodology into
26 reasonable, forward-looking non-recurring charges for UNE, and interconnection
27 orders.

1 I also recommend a proposed rate design that would incorporate the
2 forward-looking assumptions and principles I have mentioned thus far.
3 Specifically, the rate design should incorporate an end-to-end process where by the
4 NRC rate for a particular UNE reflects the entire process necessary to order and
5 provision the UNE. Secondly the rate design should reflect the type of order, and
6 should not include disconnect cost. Disconnect NRCs should be modeled
7 differently and reflected separately.

8
9 For that reason I recommend that the Commission adopt the specific NRCs
10 that are developed by the NRCM submitted by AT&T/WorldCom on July 2, 2001.

11
12 **Q. WAS A MODEL RUN WITH A LIST OF NRCS FILED ON JULY 2?**

13
14 **A.** Yes a series of spreadsheets produced by the NRCM were submitted. On the
15 Summary Page (page 1) is the total non-recurring cost for the 49 elements produced
16 by the NRCM. I recommend that the Commission adopt these non-recurring
17 charges, because they comport with forward-looking economic costing and reflect
18 the important assumptions, inputs, and methodology that I have discussed above.

19
20 Page 2 of that exhibit is the adjustments to input variables used by the
21 model. It is on this page you can see that the model was set to calculate the NRCs
22 based on thirty-nine percent (39%) fiber feeder network (Copper Loop Percentage:
23 sixty-one percent (61%)) and that the Variable Overhead was adjusted to eight
24 percent (8%).

1 Accompanying those 2 pages is the batch output produced by the NRCM
2 showing process flows for elements referenced on the Summary page. Within these
3 series of pages one can examine the efficient steps that are necessary to activate a
4 request for a UNE by the CLEC. These “batch output” sheets provide a more
5 detailed explanation of the individual NRCs shown on the first, summary page.

6

7

8 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

9 **A. This concludes my testimony**